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CONTRACT REQUIREMENT

This report was prepared in accordance with the requirements of CCN 35 to Contract AF33(657)-7132 and is submitted in compliance with paragraph B(1.1.3.1.1)1.1 of Statement of Work System 620A, Exhibit 620A-62-2, dated 26 January 1962, revised 1 August 1962.

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LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (CONT)

1.0 SUMMARY

Aerodynamic noise data obtained from a transonic wind tunnel test of an X-20/Titan IIIC model are reported. Measurements made at 28 test points on the X-20 payload only were designed to define the aerodynamic noise environments resulting from separated flow and fluctuating shock phenomena associated with transonic flight in the Mach number range 0.60 - 1.08. Angles of attack and yaw were varied within ± 4°. Reported data include overall and one-third octave band sound pressure levels and space-correlation coefficients in the frequency range 40 - 2500 cps. These have been evaluated for a number of representative test conditions selected from a total of 202 test runs.

No analyses of reported data are incorporated in the present document which is essentially a test data report intended to provide data for subsequent analyses. The latter will be conducted by X-20 Structures and Materials Technology relative to specific studies of interest, e.g., comparison of measured data with predicted aerodynamic noise environments at specific locations on the X-20 configuration. Brief descriptions of instrumentation and basic test procedures are presented.

This test represents the Boeing Company's portion of the X-20/Titan IIIC buffet test program conducted jointly with the Martin-Marietta Company. The test was conducted during the period of 22 April 1963 through 1 May 1963 at the NASA/Ames 14 foot wind tunnel facility.

2.0 INTRODUCTION

Aerodynamic noise (buffeting) is anticipated to be the primary cause of X-20 structural vibration during flight. Early in 1962 The Boeing Company conducted wind tunnel tests to measure the fluctuating aerodynamic pressures on a model X-20 abort vehicle (data reported in Boeing Document D2-80713). Analyses of test data indicated that measured sound levels were within the acoustic design environment for the external surface of the X-20 glider. Data were lacking, however, which established the effect of the Titan III booster configuration on the acoustic environment at aft sections of the glider during the transonic boost phase of flight.

Mercury flight data measured at the booster/capsule adapter shoulder indicated the existence of rms fluctuating pressure magnitudes of the order of 10% to 20% of the free stream dynamic pressure during the transonic portion of flight (NASA Technical Note D-997). Similar results were observed in wind tunnel tests, employing various payload shapes, conducted at the NASA/Ames Research Center (NASA Technical Notes X-503, X-646). Extrapolation of these data to the X-20 configuration resulted in an increased acoustic design environment for the X-20 glider-booster transition section.

In view of the above considerations, the test program described in the present document was conducted to aid in further defining the acoustic environment associated with the X-20.

Honeywell Model LAR 7400 tape recorder (large rack-mounted recorder to the left of the figure). The second tape recorder shown (to the right) in Figure 6 is a 14-channel Ampex Model CP 100 used to re-record the test data for data reduction at Boeing-Seattle in compliance with a requirement specifying retention of all original data tapes at the Ames Research Center.

3.3. Calibration

3.3.1 Frequency Response

A block diagram of instrumentation used for frequency response calibration of the Ames transducer systems is shown in Figure 7. Calibration was performed by a closed-coupler, pressure calibration technique, using a wedge-shaped pressure coupler.

The Ames transducer and a 1/4 inch diameter Bruel & Kjaer Model 4136 condenser microphone, employed as a secondary standard, were mounted with their diaphragms flush with the internal cavity of the closed-coupler calibrator. The standard microphone was calibrated by an electrostatic actuator and found to have a flat frequency response from 40 through 2500 cps. The sensitivity of the standard microphone was checked prior to each calibration with a Bruel & Kjaer pistonphone at a level of 124 db and a frequency of 250 cps.

The acoustic driver unit was excited by a sinusoidal sweep signal; a constant sound pressure level of 105 db re 0.0002 microbar, as indicated by the reference microphone, was maintained by use of compressor circuitry over a 40 - 2500 cps frequency range. Traces of the output signals of the Ames and reference transducers were obtained on a Bruel & Kjaer graphic level recorder for direct comparison of frequency response of the two transducers to a common sound pressure level input.

Five of the 28 Ames transducers used in this test program were individually calibrated by the method described. The frequency response characteristics of these five transducer systems are shown in Figure 8 (a-e). These curves indicate some dropping off of response at frequencies above 500 cps for two transducers; compensation for this response characteristic for the transducer systems not individually calibrated was accomplished by applying a frequency response correction as determined from Figure 9, which shows the average response correction curve for the five transducers individually calibrated.

3.3.2 Phase Shift Determination

A block diagram of the instrumentation to determine the phase relation between transducer systems used for evaluation of space-correlation coefficients is shown in Figure 10.

Two Ames transducers were mounted in the closed-coupler calibrator, which imposed an in-phase dynamic pressure with single frequency excitation of the acoustic driver unit. The output signals of the transducers were amplified and recorded on magnetic tape by the Honeywell Model LAR 7400 recorder.

The recorder signals were played back, with the signal from one transducer directed to one axis of an oscilloscope and the signal from the other transducer directed through a phase shifter to the other axis of the oscilloscope. The phase shifter was adjusted until the Lissajous figure on the oscilloscope indicated no phase shift between the two signals; the phase angle was then read directly on the phase shifter dial.

The phase angle between the two systems forming each pair used for space correlation evaluations is shown in Table I. Specific transducer system - tape recorder channel assignments were maintained throughout the test program. These assignments are listed in Table II, which also shows the corresponding Ampex CP 100 recorder channels on which data for space-correlation measurements were copied.

3.3.3 Absolute Sound Pressure Level Calibration

Transducers were calibrated with reference to an absolute sound pressure level after mounting of the model in the wind tunnel. A battery-operated, transistorized acoustic calibrator, especially fabricated for this application to provide a compact, portable unit, imposed a sound pressure level of 150 db re 0.0002 microbar at a frequency of 1000 cps at the transducer diaphragm.

Daily static pressure calibration, using an input gage pressure of -1.0 psi, was performed on all transducers by a member of the Ames Research Center Staff. For transducers that were mounted in the model and inaccessible to the dynamic pressure calibrator, the static pressure calibration data were applied. This procedure was based on consistent agreement noted between results of both static and dynamic pressure calibration of other transducers.

3.3.4 Vibration Response of Transducers

The vibration response characteristics of typical Ames transducers were evaluated prior to testing. Results of previous X-20 model tests (Martin Marietta Co. Inertia Compensated Balance Tests) conducted in the 14-foot transonic wind tunnel indicated that a maximum overall vibration environment of 1g rms could be expected. Based on these findings, all reported acoustic data are at least 8 db above the level corresponding to the maximum signal due to vibration response.

3.4 Procedures

3.4.1 Pre-test procedures

Daily calibration was performed on all transducers on the mounted model, as described in the preceding section, and the system response to the absolute sound pressure level calibration signal was recorded. Carrier amplifiers were balanced prior to recording all calibration signals and before each test run.

3.4.2 Test Conditions

The test conditions were selected to cover the range of interest and planned in a sequence allowing minimum delays for model changes. Complete print-outs of model attitude and tunnel parameter values were obtained during each test run which was conducted for a minimum duration of one minute under stable conditions. Test runs (identified by correlation numbers), corresponding tunnel Mach numbers, and angles of attack and yaw defining model attitudes are listed in Table III (a). Nominal values of tunnel parameters corresponding to given Mach number conditions are shown in Table III (b).

Test signals from the 28 transducers were monitored, attenuated if necessary to prevent overload, and recorded on the Model LAR 7400 tape recorder for one minute of test run under stable conditions.

3.4.3 Re-recording of Test Data

As mentioned, all test data were re-recorded on the Ampex Model CP 100 in compliance with the requirement for all original data tapes to remain at the Ames Research Center. Additional considerations associated with the recording and re-recording procedures include the following:

A characteristic frequency response drop at 2500 cps was noted on all channels of the Honeywell Model LAR 7400 tape recorder; Table IV lists the appropriate correction applied to sound pressure level data for the one-third octave band centered on 2500 cps to compensate for the frequency response of each data channel of the LAR 7400 recorder. No additional correction for tape recorder frequency response is required, based on the observation of a flat frequency response throughout the 40 - 2500 cps range of interest for all channels of the Ampex CP 100 recorder.

Phase angle shifts, of interest to space-correlation evaluations, were significantly affected by the re-recording procedure. To check for phase shift, a common signal was recorded on all channels of the Model LAR 7400 tape recorder, played back, and re-recorded by the Ampex CP 100 recorder and played back through a phase detection circuit. Figure 11 is a block diagram of the instrumentation used for checking the phase shift of recorded and re-recorded data through the two tape recorders on the various pairs of data channels used for space-correlation evaluations. Table V lists the phase shift values associated with the indicated pairs of LAR 7400 and CP 100 data channels

3.5 Data Reduction

3.5.1 Sound Pressure Level Data

Acoustic instrumentation used for reducing the taped test data to obtain sound pressure level values in one-third octave bands of frequencies is shown in Figure 12. Spectrum analysis of the acoustic data was accomplished by playing the data tapes through one-third octave band filters and obtaining traces of the true rms output voltage signals on a graphic level recorder. The traces were referenced to

the voltage trace corresponding to the 150 db calibration signal to determine one-third octave band sound pressure level values. These values defined a sound pressure level spectrum in the frequency range 40 - 2500 cps after appropriate corrections were made for frequency response of the transducer system and tape recorder. Summation of the one-third octave band levels yielded an overall sound pressure level in the frequency range of interest.

In some cases, however, only the overall sound pressure levels were determined by playback of data tapes through a broad band filter passing all frequencies in the 40 - 2500 cps range. Since these values are not corrected for frequency response, they may reflect slightly different values for overall sound pressure level data relative to the overall sound pressure level value computed by summation of component one-third octave band sound pressure level data. The computed values are distinguished by an asterisk following the tabulated overall sound pressure level data. The difference in values of overall sound pressure level determined by the two methods described will be greatest for spectra which peak at frequencies where system and tape recorder response begins to fall off.

3.5.2 Space Correlation Data

Acoustic instrumentation used for determining voltage values required for evaluation of space-correlation coefficients (R) is shown in Figure 13.

Signals from two transducers, "a" and "b", used to form one pair for space correlation coefficient evaluations, were played-back through a sum and difference amplifier which performed a

vector addition and subtraction of the two signals. The magnitudes of the signals of the two systems were equalized by amplifier gain controls, and the space correlation coefficient, R, was evaluated by the expression,

$$R = \frac{\left(\frac{\vec{E}_a + \vec{E}_b}{\vec{E}_a - \vec{E}_b}\right)^2 - 1}{\left(\frac{\vec{E}_a + \vec{E}_b}{\vec{E}_a - \vec{E}_b}\right)^2 + 1} \qquad |E_a| = |E_b| \text{ (rms)}$$

where $\vec{E}_a$, voltage output of transducer system "a"

$\vec{E}_b$, voltage output of transducer system "b".

4.0 RESULTS

4.1 Sound Pressure Level Data

Sound pressure level data in one-third octave bands of frequency, corrected for attenuator settings and system frequency response characteristics, are reported in Table VI and Figure 14. Overall sound pressure level data evaluated by playback of data tapes through a broad band filter, as described in the preceding section, are shown in Table VII. Note that tabulated values of overall sound pressure level which were computed by summation of component one-third octave band levels are identified by an asterisk.

Wind tunnel background noise levels for the Mach number range 0.7 - 1.1 are shown in Figure 15 for comparison of measured noise data relative to background noise. Data shown in Figure 15 were measured by the Ames Research Center Staff during previous tests conducted in the 14-foot transonic wind tunnel.

4.2 Space-Correlation Coefficient Evaluations

Space-correlation coefficients evaluated for selected test conditions and pairs of data systems are shown in Table VIII. Figure 16 shows space-correlation coefficients for various one-third octave bands in the 40 - 2500 cps range considered. It should be noted that considerable phase shifts were introduced by the instrumentation; this seriously limits the usefulness of the measured space-correlation coefficients. Therefore, no space-correlation data are reported at frequencies where the phase shift exceeds 20°.

4.3 Transient Pressure Fluctuations

A small portion of the acoustic data indicated large transient pressure fluctuations. Typical oscillograph time history traces of the peak fluctuating pressure measured are shown in Figure 17. The large transient pressure phenomenon was observed from measurements made from the cylindrical transition section but the data are not reported in the acoustic test results. The values of transient condition are indicated in Figures 17b and 17c. Similar transient data have been reported in other wind tunnel tests (NASA D-1633). The major portion of the acoustic data measured is of the type shown in Figure 17a and is considered to be most representative of the acoustic loading on the glider/transition structure. However, Boeing X-20 Structures will evaluate the significance of the transient phenomenon (Figure 17b and 17c) in detail.

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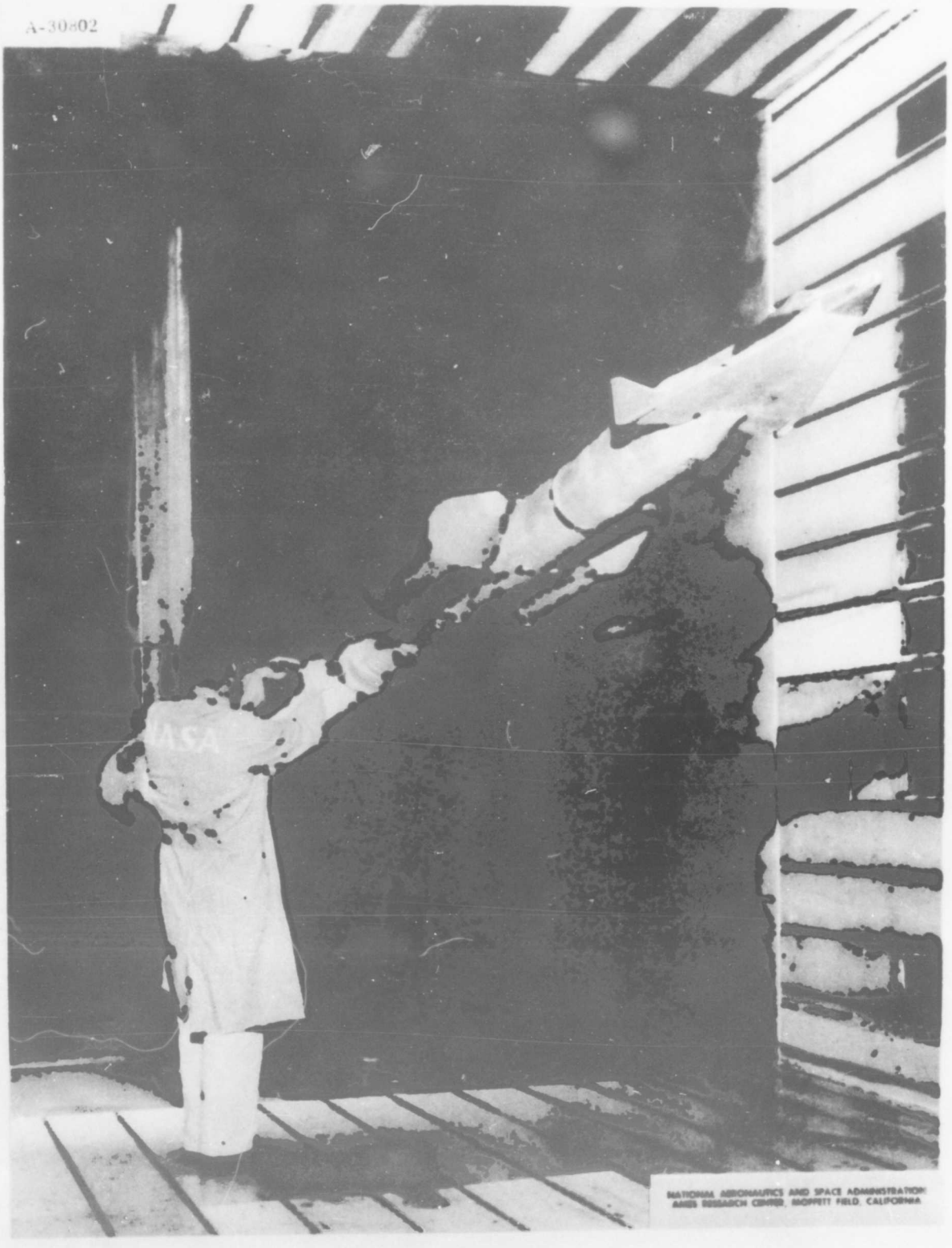

CALC			REVISED	DATE	Figure 1. X-20/62$\frac{1}{4}$A model mounted in the 1$\frac{1}{2}$-foot wind tunnel.
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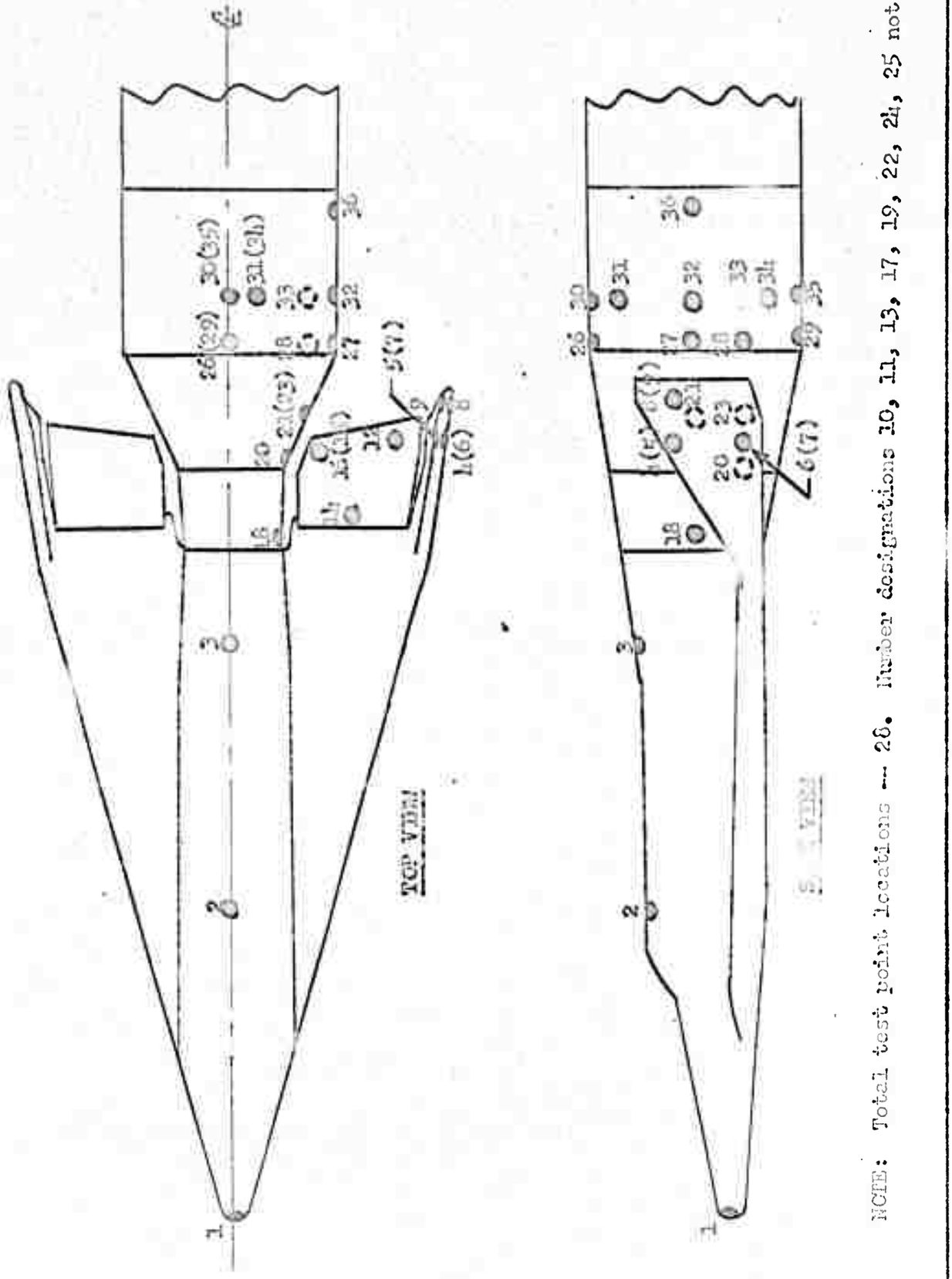

NOTE: Total test point locations -- 26. Number designations 10, 11, 13, 17, 19, 22, 24, 25 not used.

CALC			REVISED	DATE	Figure 2. Transducer Locations.
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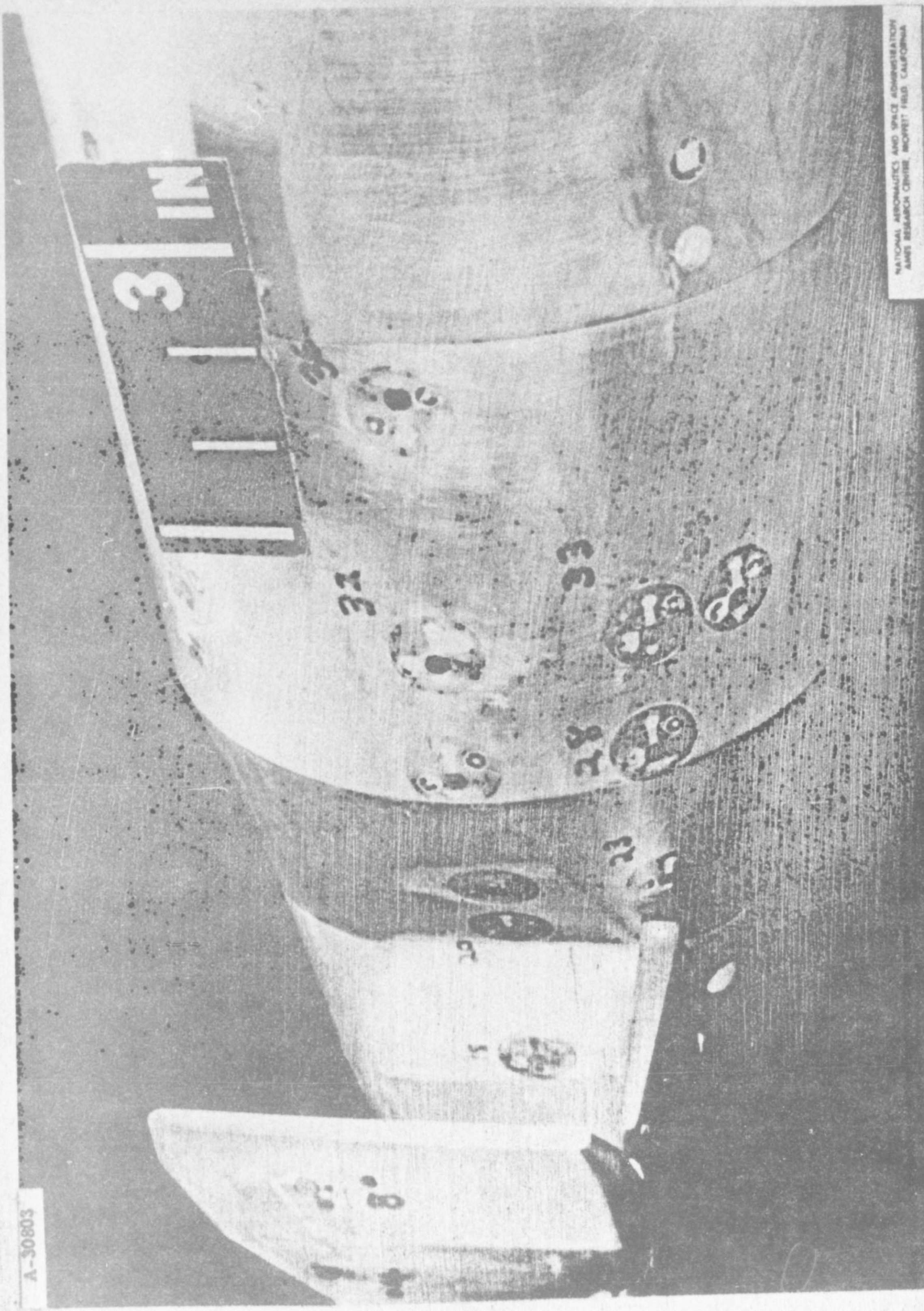

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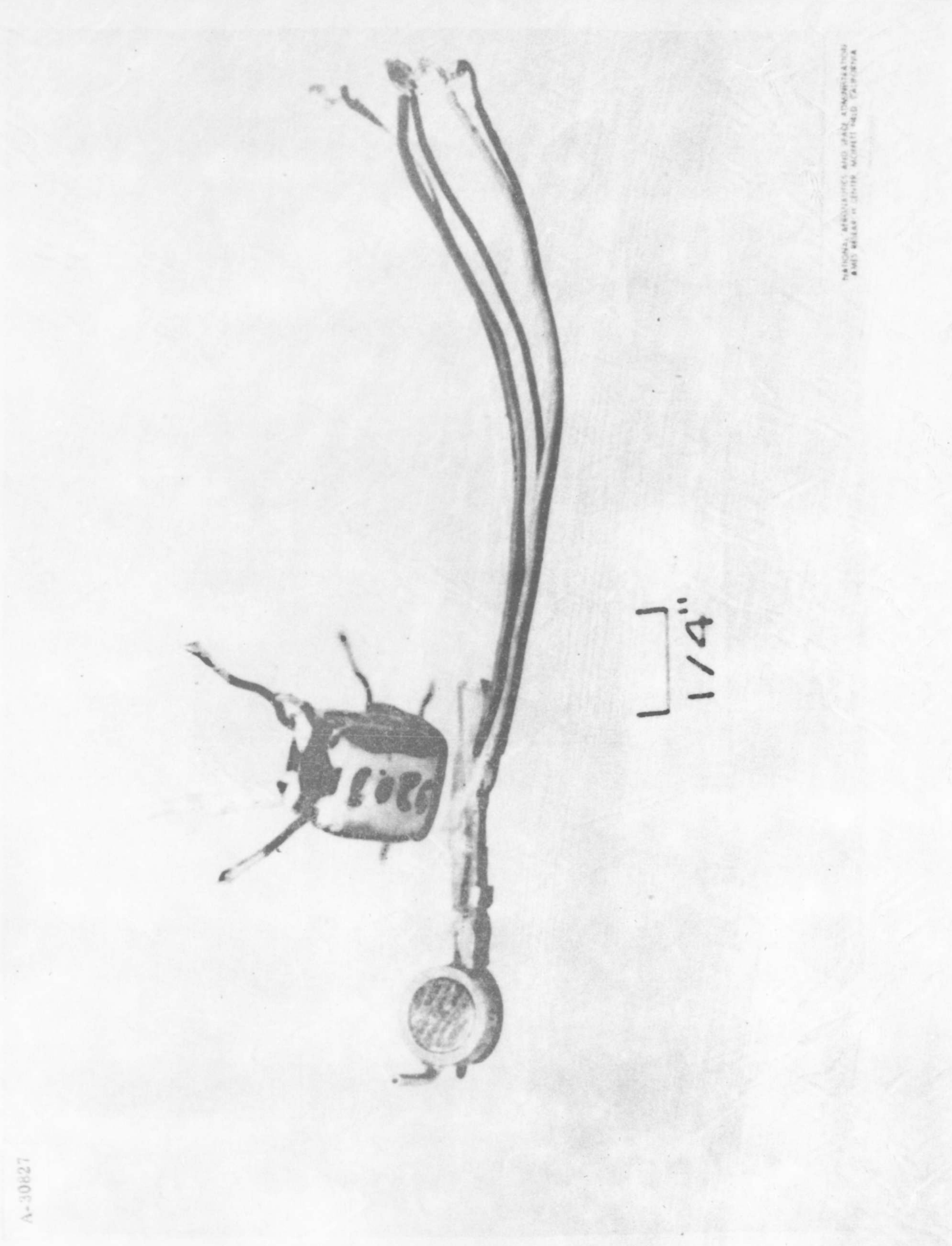

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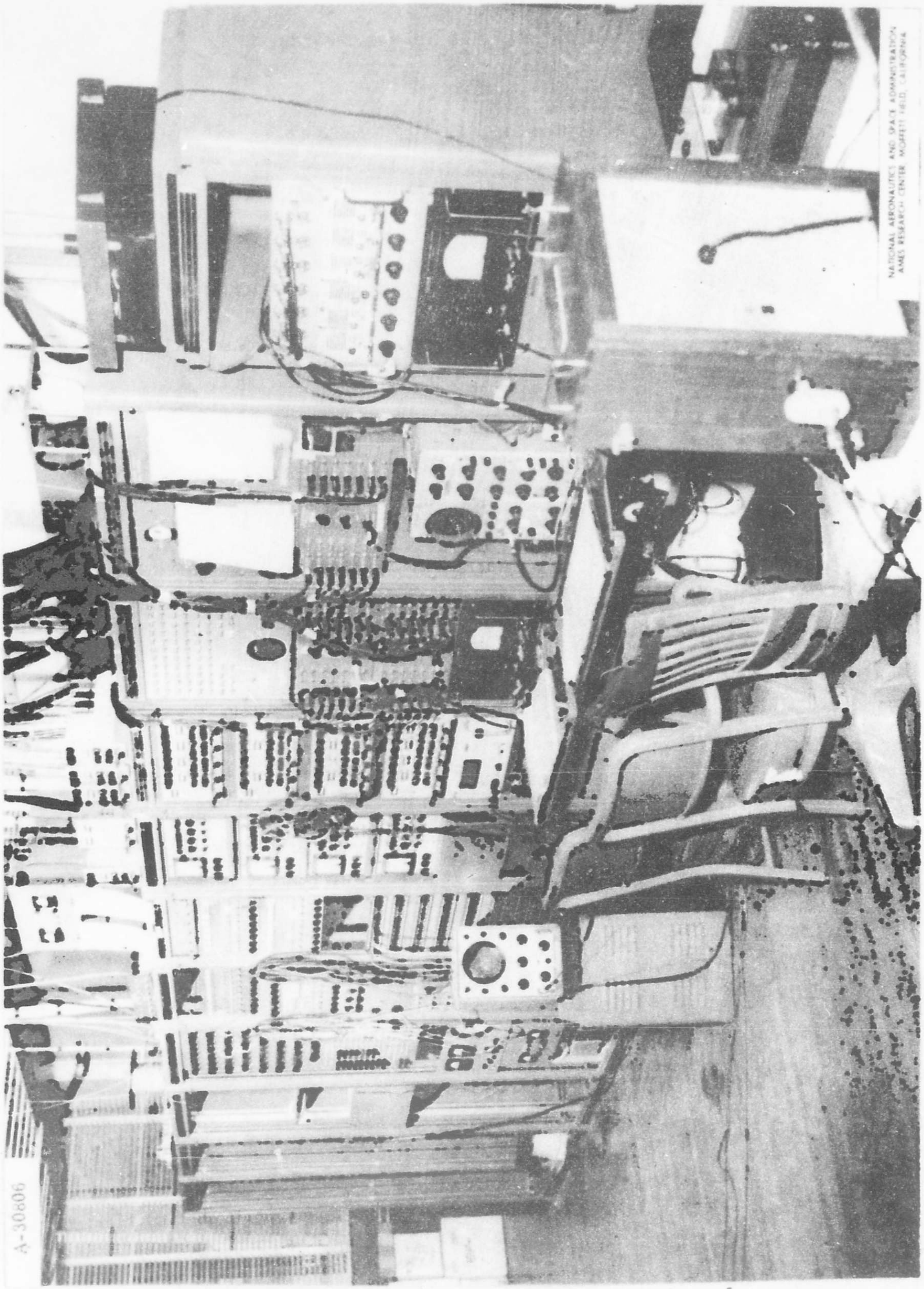

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Figure [illegible] Support instrumentation for transducer and signal monitoring.

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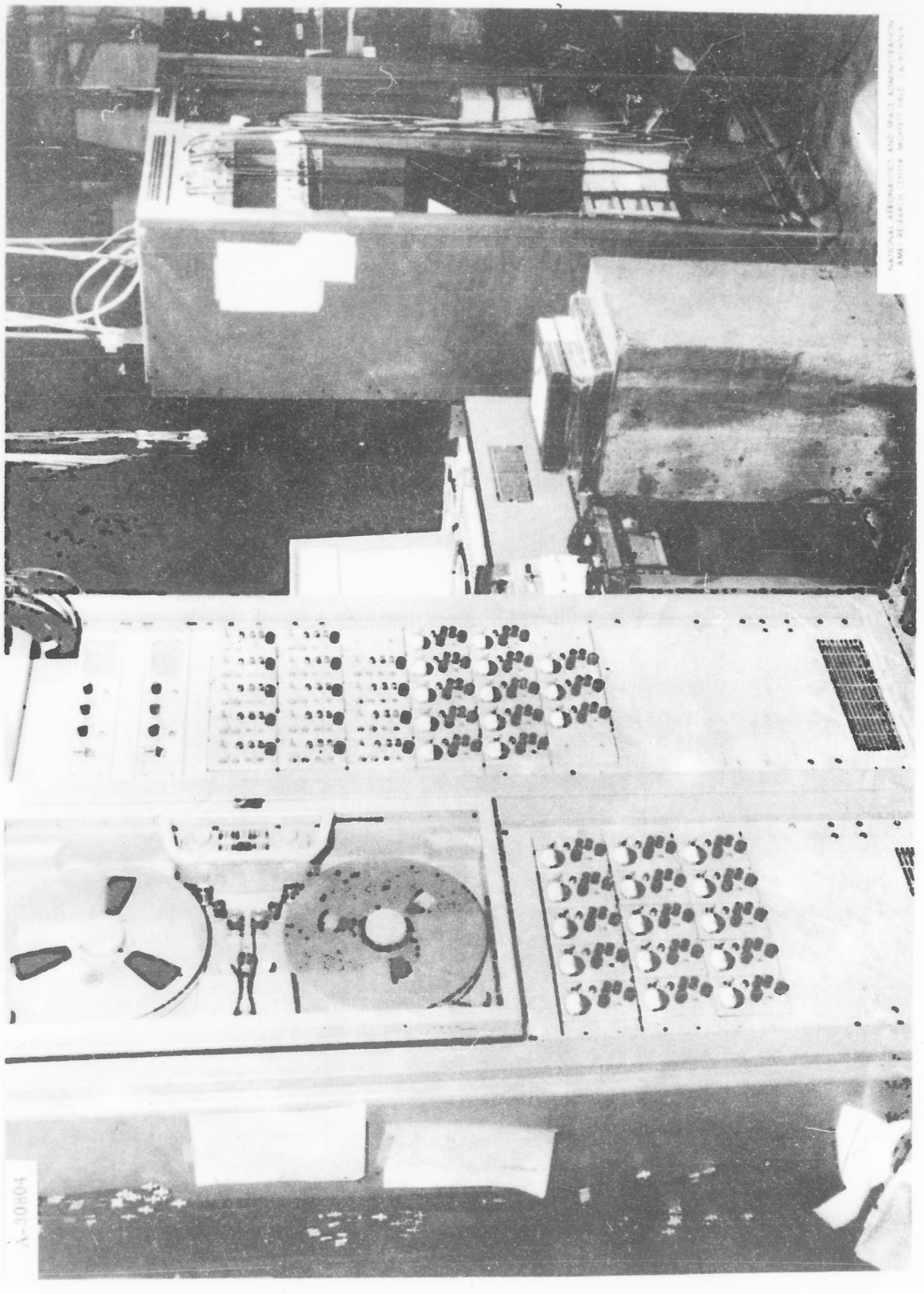

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CALC			REVISED	DATE	Figure 4. Magnetic tape recorders for recording transducer output signals.
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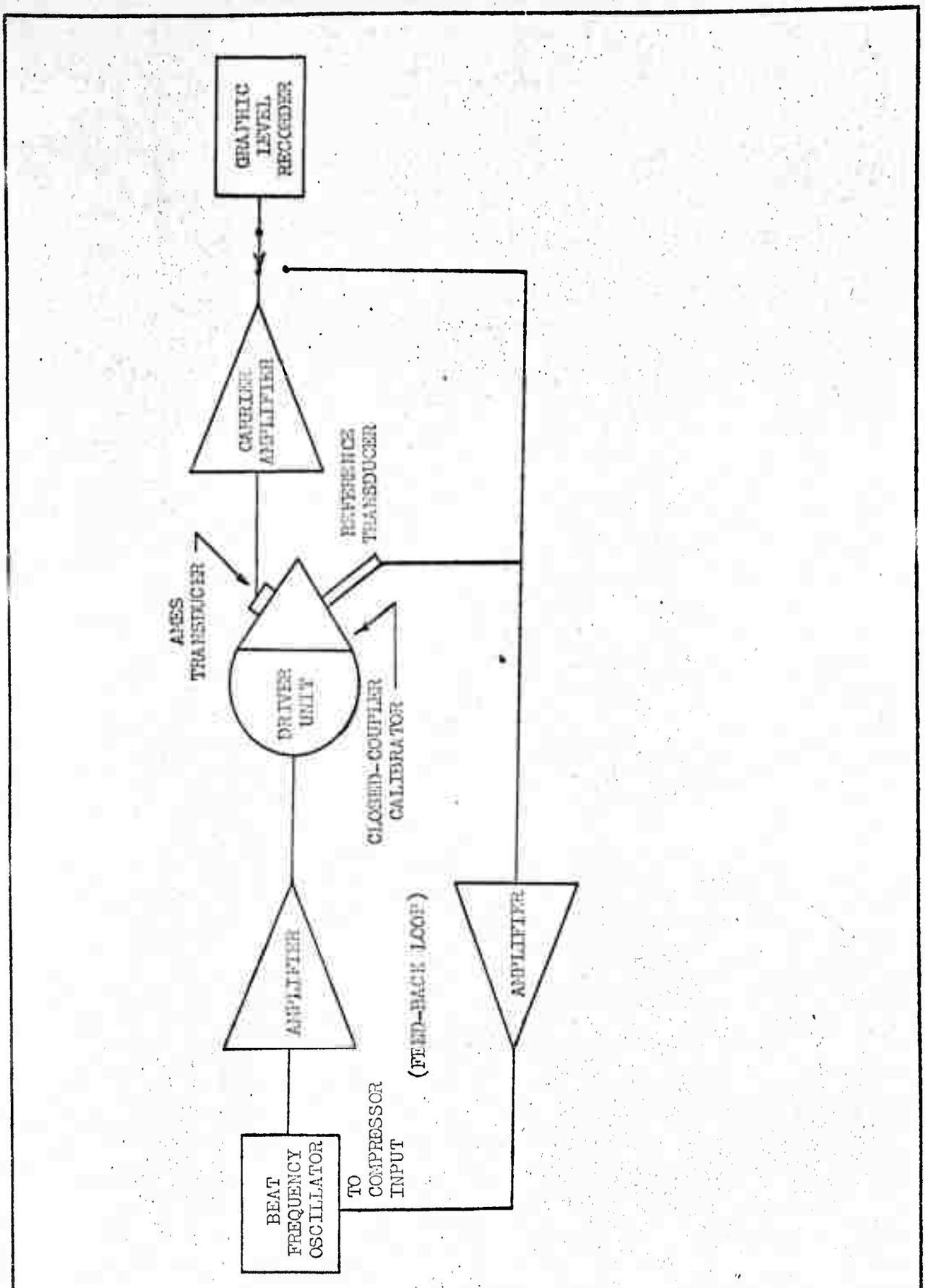

CALC			REVISED.	DATE	Figure 7. Block diagram of equipment -- Transducer calibration.
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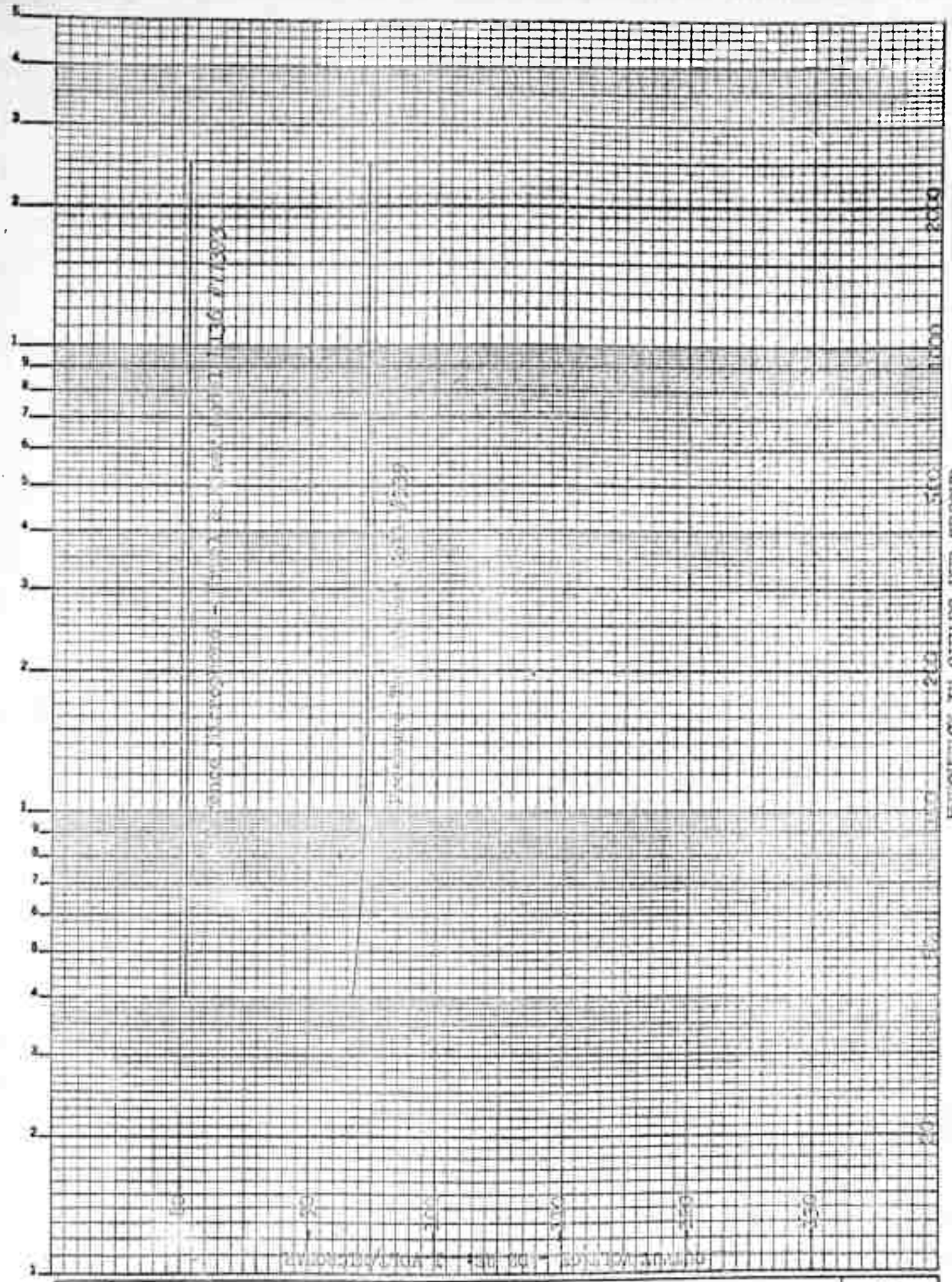

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Figure 8(a). Response of Ames Pressure Transducer Co... #339, with Carrier Amplifier.

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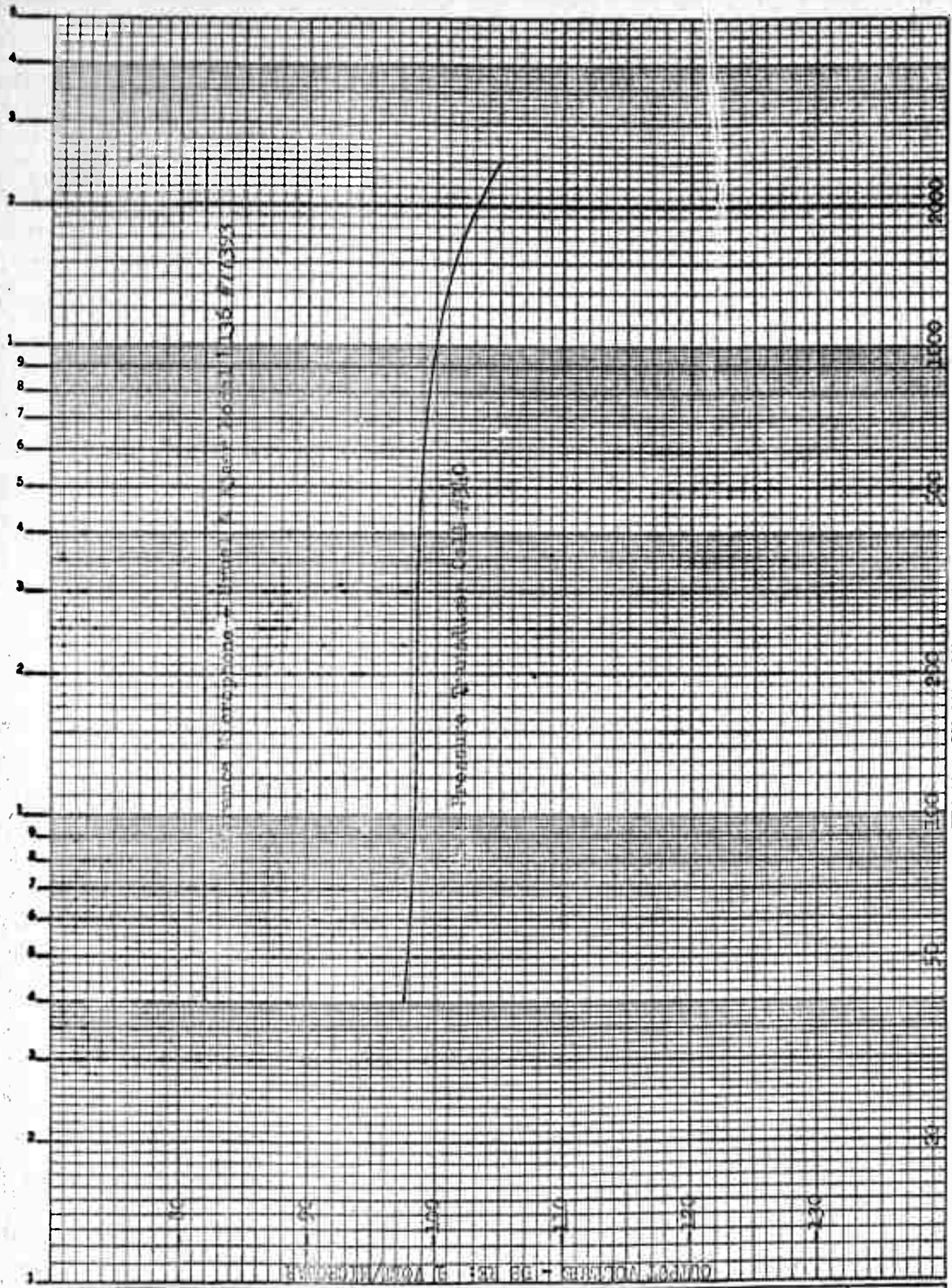

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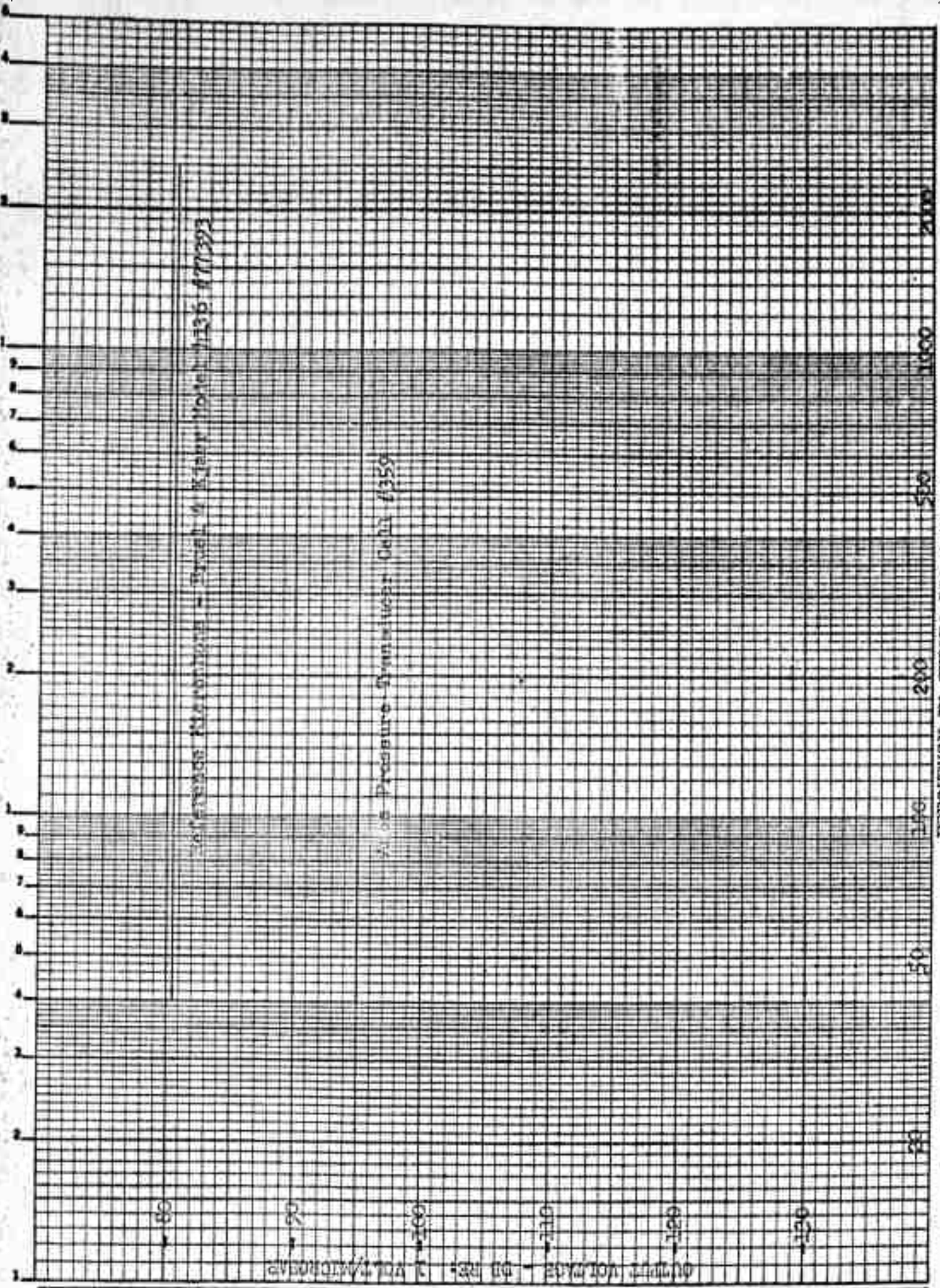

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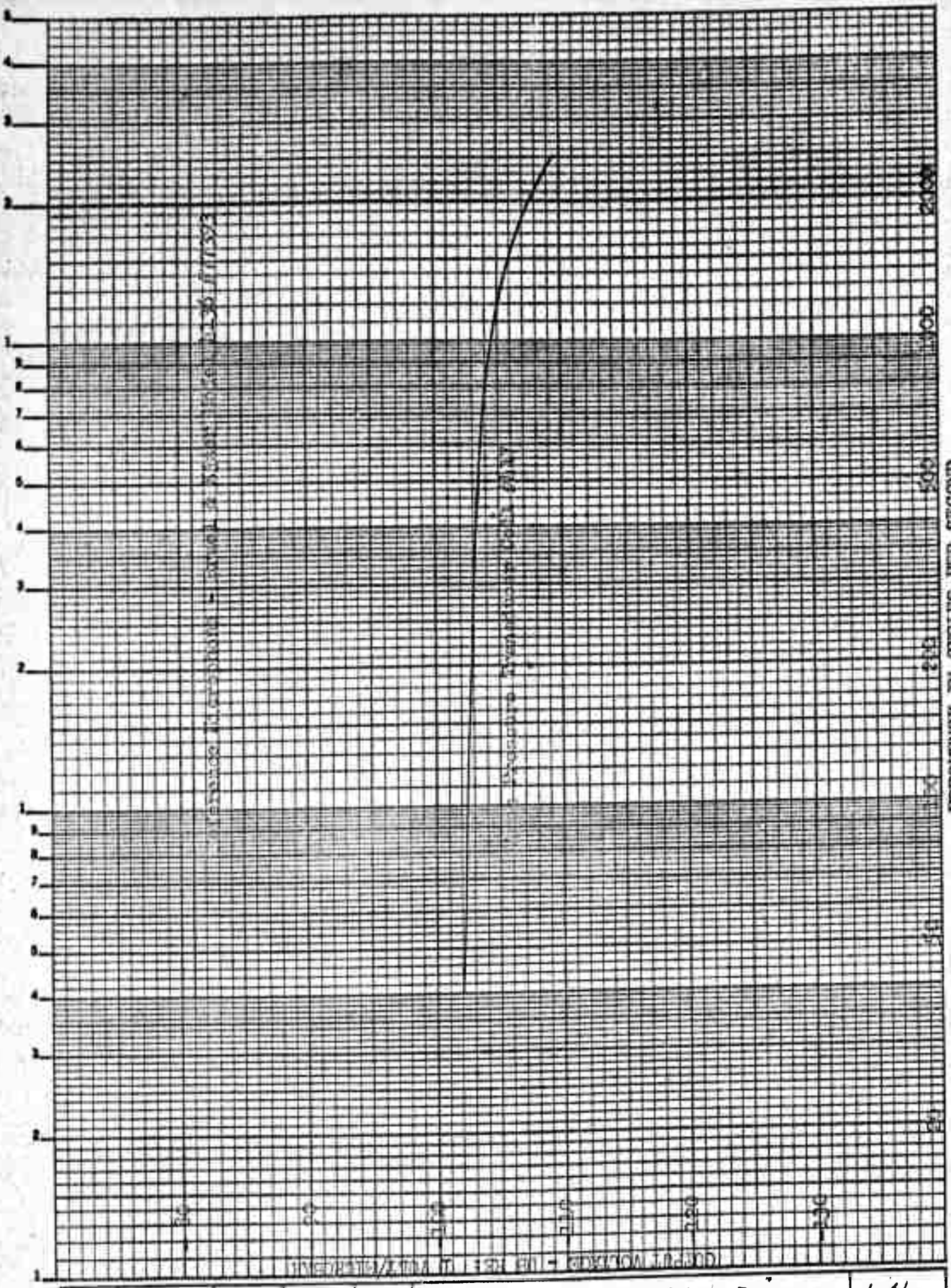

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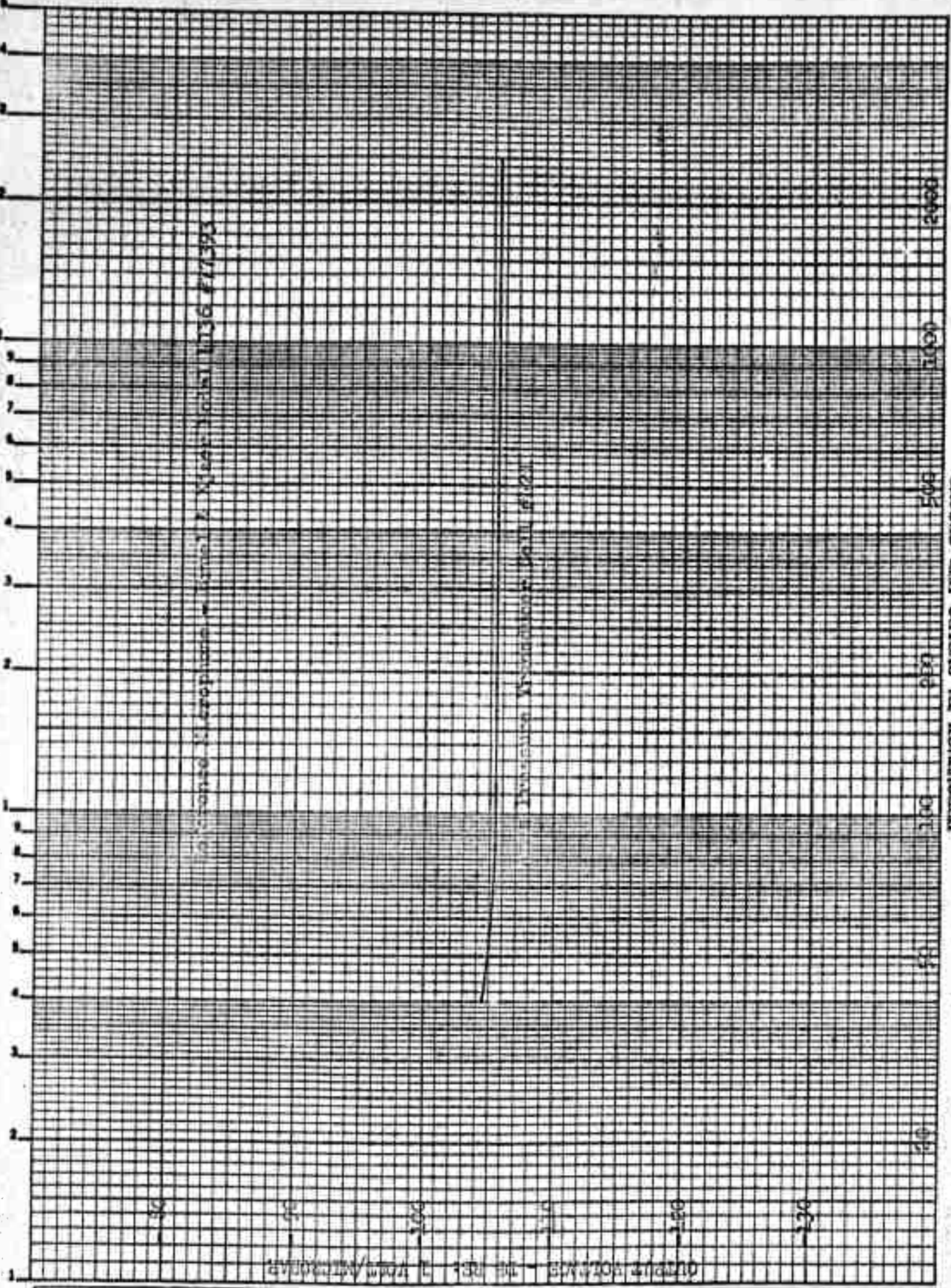

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Figure 8(e). Response of Ames Pressure Transducer Cell #421, with Carrier Amplifier.

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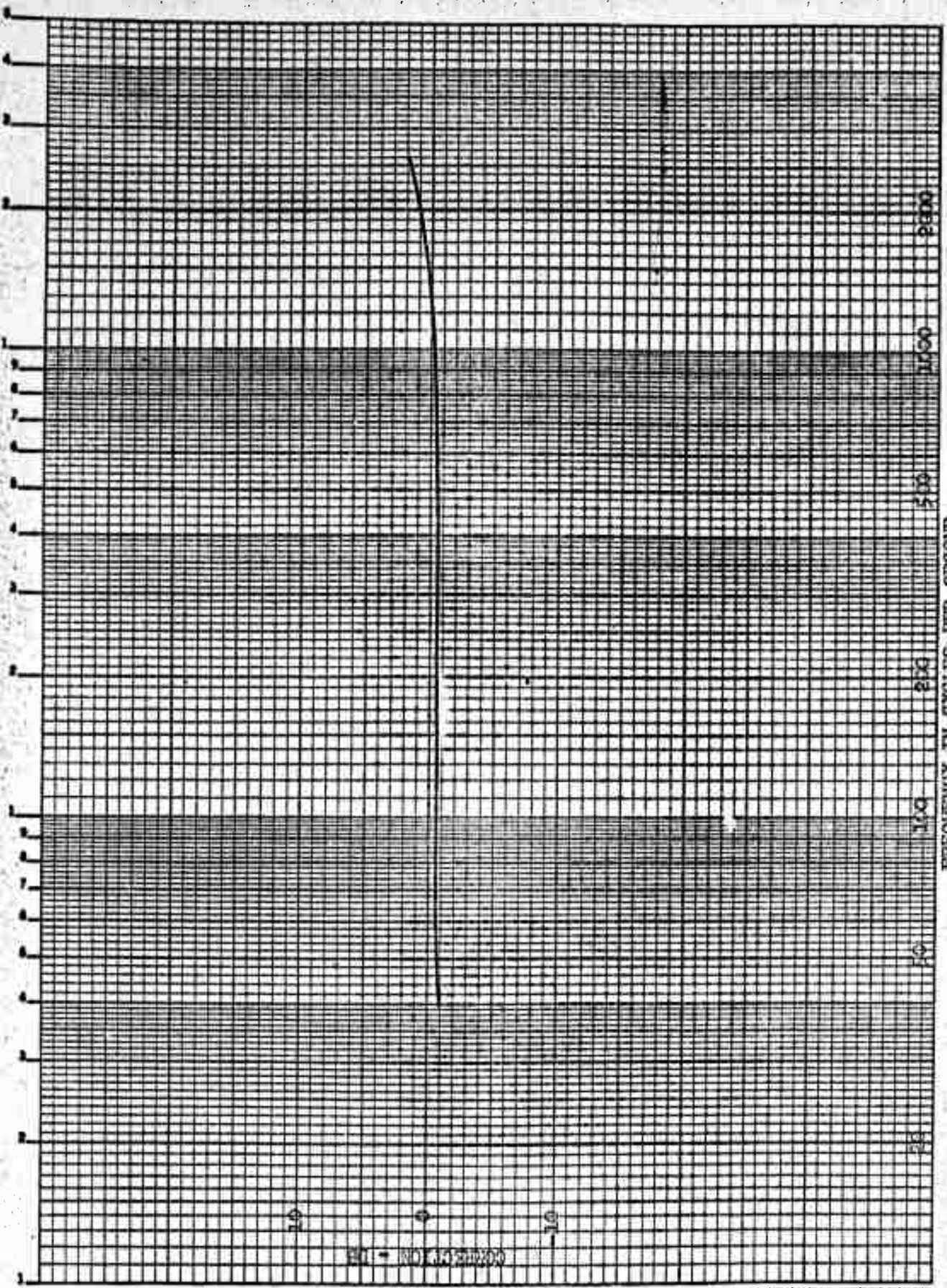

CALC			REVISED	DATE	Figure 9. Average correction curve for dynamic pressure response of Ames pressure transducer cells.
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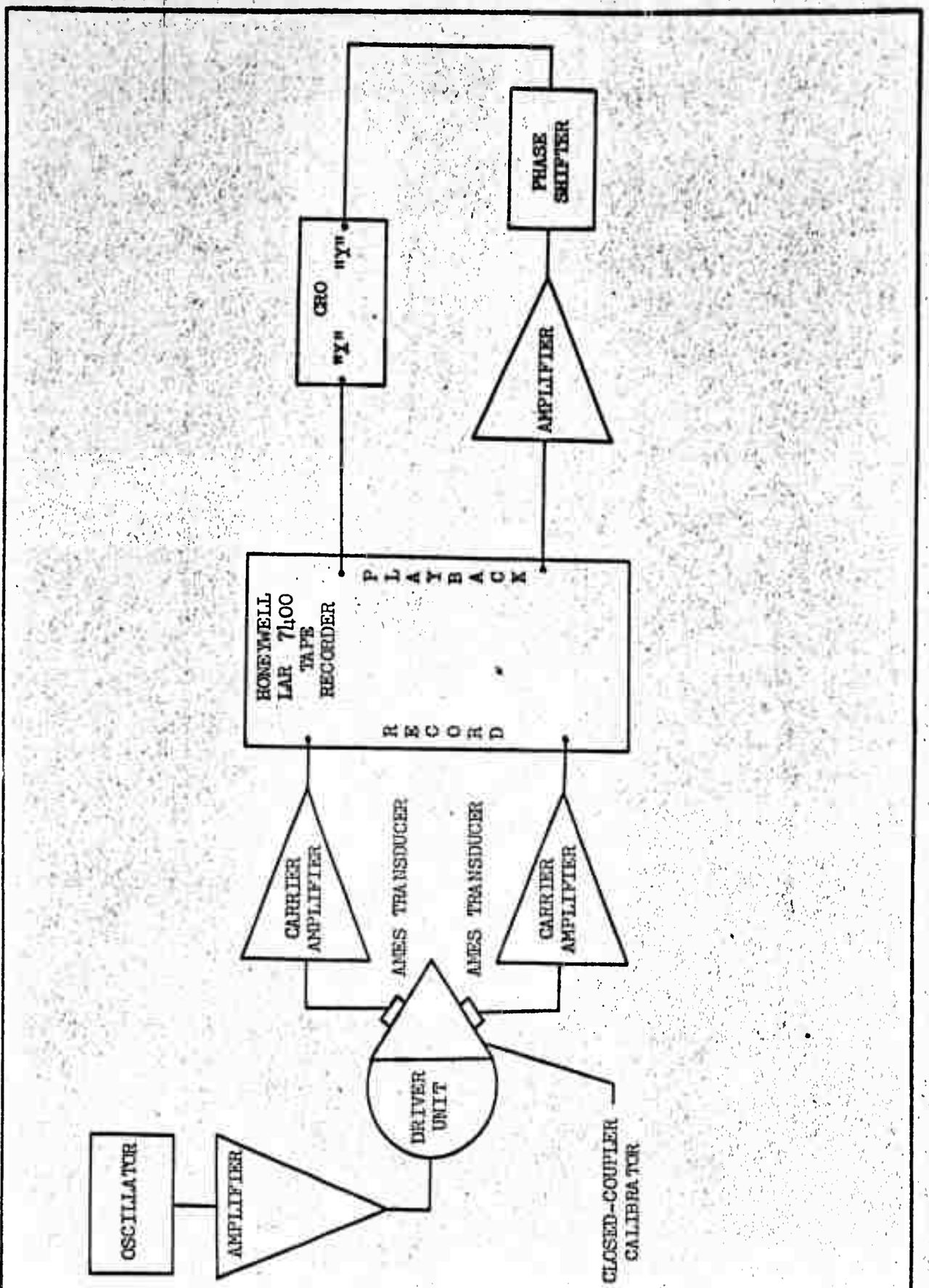

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Figure 10. Block diagram of equipment -- Phase check of transducer signals through LAR 7400 recorder.

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REFERENCE TRANSDUCER	Test Point Channel	4 14	4 14	4 14	14 20	14 20	27 7	27 7	27 7	32 15	32 15	32 15	32 15	32 15	32 15
TEST TRANSDUCER	Test Point Channel	5 10	8 16	9 8	12 22	16 6	26 3	28 25	29 27	21 23	30 13	31 17	34 19	35 9	36 21
	Frequency	Phase Angle *													
	100 cps	0°	3°	0°	0°	4°	1°	4°	5°	4°	0°	0°	5°	0°	2°
	500	1	2	0	0	18	2	18	18	14	0	16	15	0	16
	800	2	0	0	0	24	2	25	22	23	0	20	20	0	23
	1000	2	4	0	0	27	4	29	26	26	0	29	26	0	28
	2000	1	3	0	2	37	3	41	31	35	4	34	39	7	34
	2500	2	2	0	7	—	13	—	—	—	9	—	—	2	—
	3000	3	3	0	6	—	14	—	—	—	13	—	—	2	—

* Includes transducer and LAR 7400 recorder (See Figure 10).

Table I. Phase shift through transducer systems and LAR 7400 recorder.

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ORIGINAL DATA TAPE HONEYWELL LAR 7400 CHANNEL	TEST POINT	TAPE COPY AMPEX CP 100 CHANNEL
1	1	-
2	20	-
3	26*	3
4	23	-
5	18	-
6	16*	6
7	27*	7
8	9*	8
9	35*	9
10	5*	10
11	33	-
12	6	-
13	30*	13
14	4*	4
15	32*	5
16	8*	6
17	31*	7
18	7	-
19	34*	1
20	14*	10
21	36*	11
22	12*	12
23	21*	3
24	15	-
25	28*	5
26	2	-
27	29*	9
28	3	-

* Systems used for space correlation measurements.

CALC			REVISED.	DATE	Table II. Test point - data channel assignments.	
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CORRELATION NUMBER	MACH NUMBER	ANGLE OF* ATTACK (α)	ANGLE OF** YAW (β)
301	0.60	0	0
302	0.70	0	0
303	0.75	0	0
304	0.80	0	0
305	0.80	4	0
306	0.80	-4	0
307	0.85	-4	0
308	0.85	0	0
309	0.85	4	0
310	0.90	0	0
311	0.90	4	0
312	0.90	-4	0
313	0.95	-4	0
314	0.95	0	0
315	0.95	4	0
316	1.00	4	0
317	1.00	0	0
318	1.00	-4	0
319	1.08	-4	0
320	1.08	0	0
321	1.08	4	0
323	0.825	4	0
324	0.825	2	0
325	0.825	0	0
326	0.825	-2	0
327	0.825	-4	0
328	0.86	-4	0
329	0.86	-2	0
330	0.86	0	0
331	0.86	2	0
332	0.86	4	0
333	0.88	4	0
334	0.88	2	0
335	0.88	0	0
336	0.88	-2	0
337	0.88	-4	0

CORRELATION NUMBER	MACH NUMBER	ANGLE OF* ATTACK (α)	ANGLE OF** YAW (β)
338	0.90	-4	0
339	0.90	-2	0
340	0.90	0	0
341	0.90	2	0
342	0.90	4	0
343	0.92	4	0
344	0.92	2	0
345	0.92	0	0
346	0.92	-2	0
347	0.92	-4	0
348	1.00	-4	0
349	1.00	0	0
350	1.00	4	0
351	1.08	4	0
352	1.08	0	0
353	1.08	-4	0
355	0.80	0	4
356	0.80	0	-4
357	0.85	0	-4
358	0.85	0	4
359	0.90	0	4
360	0.90	0	-4
361	0.95	0	-4
362	0.95	0	4
363	1.00	0	4
364	1.00	0	-4
365	1.08	0	-4
366	1.08	0	4
367	0.825	0	4
368	0.825	0	2
369	0.825	0	0
370	0.825	0	-2
371	0.825	0	-4
372	0.875	0	-4
373	0.875	0	-2
374	0.875	0	0

* Positive Angle of Attack, Nose Up

** Positive Angle of Yaw, Nose Right

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CALC			REVISED.	DATE	Table III. Test Conditions. a. Tunnel Mach number and model attitude.	T2-2648
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CORRELATION NUMBER	MACH NUMBER	ANGLE OF* ATTACK (α)	ANGLE OF** YAW (β)		CORRELATION NUMBER	MACH NUMBER	ANGLE OF* ATTACK (α)	ANGLE OF** YAW (β)
375	0.875	0	2		413	0.85	4	4
376	0.875	0	4		414	0.90	4	4
377	0.900	0	4		415	0.90	-4	4
378	0.900	0	2		416	0.95	-4	4
379	0.900	0	0		417	0.95	4	4
380	0.900	0	-2		418	1.00	4	4
381	0.900	0	-4		419	1.00	-4	4
382	0.925	0	-4		420	1.08	-4	4
383	0.925	0	-2		421	1.08	4	4
384	0.925	0	0		423	0.825	4	-4
385	0.925	0	2		424	0.825	2	-4
386	0.925	0	4		425	0.825	0	-4
387	0.975	0	4		426	0.825	-2	-4
388	0.975	0	2		427	0.825	-4	-4
389	0.975	0	0		428	0.85	-4	-4
390	0.975	0	-2		429	0.85	-2	-4
391	0.975	0	-4		430	0.85	0	-4
392	0.900	0	-4		431	0.85	2	-4
393	0.900	0	-2		432	0.85	4	-4
394	0.900	0	2		433	0.875	4	-4
395	0.900	0	4		434	0.875	2	-4
397	0.80	4	-4		435	0.875	0	-4
398	0.80	-4	-4		436	0.875	-2	-4
399	0.85	-4	-4		437	0.875	-4	-4
400	0.85	4	-4		438	0.825	4	-4
401	0.90	4	-4		439	0.825	-4	-2
402	0.90	-4	-4		440	0.825	-2	-2
403	0.95	-4	-4		441	0.825	0	-2
404	0.95	4	-4		442	0.825	2	-2
405	1.00	4	-4		443	0.825	4	-2
406	1.00	-4	-4		444	0.85	4	-2
407	1.08	-4	-4		445	0.85	2	-2
408	1.08	4	-4		446	0.85	0	-2
410	0.80	4	4		447	0.85	-2	-2
411	0.80	-4	4		448	0.85	-4	-2
412	0.85	-4	4		449	0.875	-4	-2

* Positive Angle of Attack, Nose Up - ** Positive Angle of Yaw, Nose Right

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Table III. Test Conditions.
a. Tunnel Mach number and model attitude. (continued)

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CORRELATION NUMBER	MACH NUMBER	ANGLE OF* ATTACK (α)	ANGLE OF** YAW (β)
450	0.875	-2	-2
451	0.875	0	-2
452	0.875	2	-2
453	0.875	4	-2
455	0.75	4	-4
456	0.75	0	-4
457	0.75	-4	-4
458	0.80	-4	-4
459	0.80	-4	-4
460	0.80	0	-4
461	0.80	4	-4
462	0.82	4	-4
463	0.82	0	-4
464	0.82	-4	-4
465	0.84	-4	-4
466	0.84	0	-4
467	0.84	4	-4
468	0.86	4	-4
469	0.86	0	-4
470	0.86	-4	-4
471	0.88	-4	-4
472	0.88	0	-4
473	0.88	4	-4
474	0.90	4	-4
475	0.90	0	-4
476	0.90	-4	-4
477	0.92	-4	-4
478	0.92	0	-4
479	0.92	4	-4
480	0.94	4	-4
481	0.94	0	-4
482	0.94	-4	-4
483	0.96	-4	-4
484	0.96	0	-4
485	0.96	4	-4
486	0.98	4	-4

CORRELATION NUMBER	MACH NUMBER	ANGLE OF* ATTACK (α)	ANGLE OF** YAW (β)
487	0.98	0	-4
488	0.98	-4	-4
489	1.00	-4	-4
490	1.00	0	-4
491	1.00	4	-4
492	1.02	4	-4
493	1.02	0	-4
494	1.02	-4	-4
495	1.04	-4	-4
496	1.04	0	-4
497	1.04	4	-4
498	1.06	4	-4
499	1.06	0	-4
500	1.06	-4	-4
501	1.08	-4	-4
502	1.08	0	-4
503	1.08	4	-4
504	0.725	4	-4
505	0.70	4	-4
506	0.65	4	-4
507	0.70	0	-4
508	0.75	0	-4

* Positive Angle of Attack, Nose Up - ** Positive Angle of Yaw, Nose Right

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Table III. Test Conditions.
a. (Concluded)

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M	TOTAL PRESSURE (PSF)	STATIC PRESSURE (PSF)	DYNAMIC PRESSURE (PSF)	REYNOLDS NUMBER PER FT. 10^6	TOTAL TEMPERATURE °R	STATIC TEMPERATURE °R	VELOCITY FPS
0.60	2100	1653	415.0	3.37	546.8	510.2	663
0.65		1583	467.6	3.31	581.4	536.2	737
0.70		1518	520.7	3.65	558.9	509.0	787
0.725		1479	545.6	3.41	598.1	541.1	878
0.75		1456	566.3	3.73	565.5	509.3	824
0.8		1381	618.8	3.8	574.1	508.9	885
0.825		1333	635.8	3.83	573.1	504.4	909
0.85		1314	662.7	3.89	575.8	503.3	933
0.86		1297	671.8	3.83	584.5	509.1	951
0.875		1272	683.6	3.87	582.2	504.7	965
0.88		1269	688.3	3.86	585.7	507.1	971
0.9		1246	704.1	3.89	586.2	504.7	990
0.92		1271	719.1	3.93	584.6	499.6	1007
0.925		1209	720.1	3.91	586.8	5.014	1013
0.94		1189	735.0	4.06	572.9	486.9	1016
0.95		1178	742.6	3.88	595.6	504.7	1045
0.96		1164	748.9	4.01	581.6	491.3	1041
0.975		1134	753.0	3.83	601.1	505.2	1073
1.0		1113	780.0	3.94	596.8	497.3	1094
1.02		1088	778.0	4.0	590.6	489.4	1103
1.04		1061	800.0	3.99	594.2	488.9	1125
1.06		1037	811.2	3.93	602.4	492.4	1150
1.08		1002	818.3	3.95	599.0	485.8	1167

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Table III. Test Conditions.
b. TUNNEL TEST SECTION PARAMETERS
(NOMINAL VALUES)

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TAPE RECORDER TRACK NUMBER (Data Channel)	DB CORRECTION*
1	4.0 db
2	3.0
3	2.0
4	1.0
5	2.5
6	0.5
7	1.5
8	3.0
9	1.0
10	1.5
11	1.0
12	1.5
13	1.5
14	1.0
15	3.0
16	1.5
17	2.0
18	2.0
19	3.0
20	4.0
21	3.0
22	2.0
23	3.0
24	4.0
25	1.0
26	2.0
27	1.5
28	2.0

*Correction for tape recorder response at 2500 cps to be added to sound pressure level values for the one-third octave band centered on 2500 cps only.

CALC			REVISED	DATE	Table IV. Correction for Honeywell LAR 7400 Tape Recorder Response at 2500 cps.	
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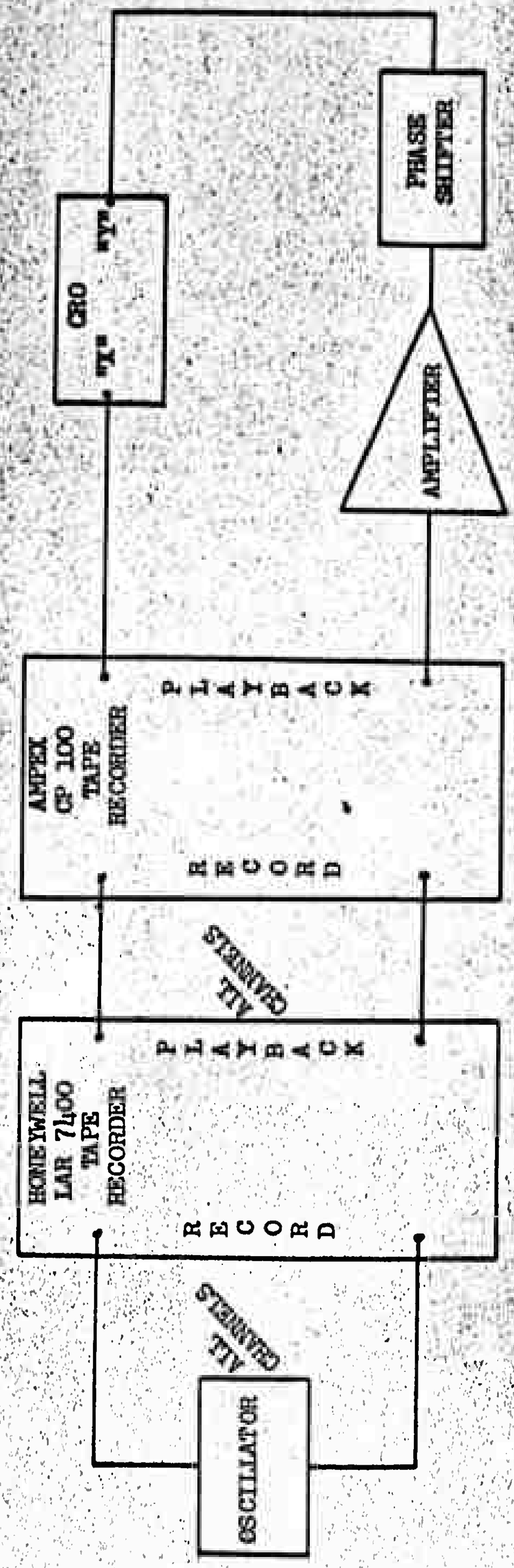

CALC			REVISED	DATE	Figure 11. Block diagram of equipment — Determination of phase difference through tape recorders.	
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REFERENCE TRACK	IAR 7400	14	14	14	20	20	7	7	7	15	15	15	15	15	15
	CP 100	4	4	4	10	10	7	7	7	5	5	5	5	5	5
TEST TRACK	IAR 7400	10	16	8	22	6	3	25	27	23	13	17	19	9	21
	CP 100	10	6	8	12	6	3	5	9	3	13	7	1	9	11
Frequency								Phase Angle							
100 cps		3.5°	2.5°	8.0°	0°	2.5°	0°	0°	0°	0°	2.5°	0°	2.5°	2.5°	2.5°
500 cps		10.0	3.5	9.0	2.5	9.0	6.5	5.5	4.5	4.5	9.0	0	5.5	6.5	8.0
800 cps		16.0	5.5	13.0	7.0	14.5	9.5	9.0	8.0	6.5	16.0	3.5	8.5	9.5	13.0
1000 cps		19.5	7.5	15.5	9.0	19.0	11.5	10.0	10.5	7.0	17.0	4.5	9.0	10.5	17.5
2000 cps		46.5	19.0	38.0	18.0	36.5	20.0	21.5	18.0	13.0	35.5	13.0	19.0	24.0	34.0
2500 cps		57.5	26.5	48.0	21.5	49.5	24.5	27.5	24.5	14.5	41.5	16.0	23.5	29.0	40.0
3000 cps		62.0	29.5	—	28.5	58.5	27.0	26.0	37.0	12.5	44.0	21.0	23.5	36.5	55.0

CALC			REVISED.	DATE	Table V. Phase shift through tape recorders.	
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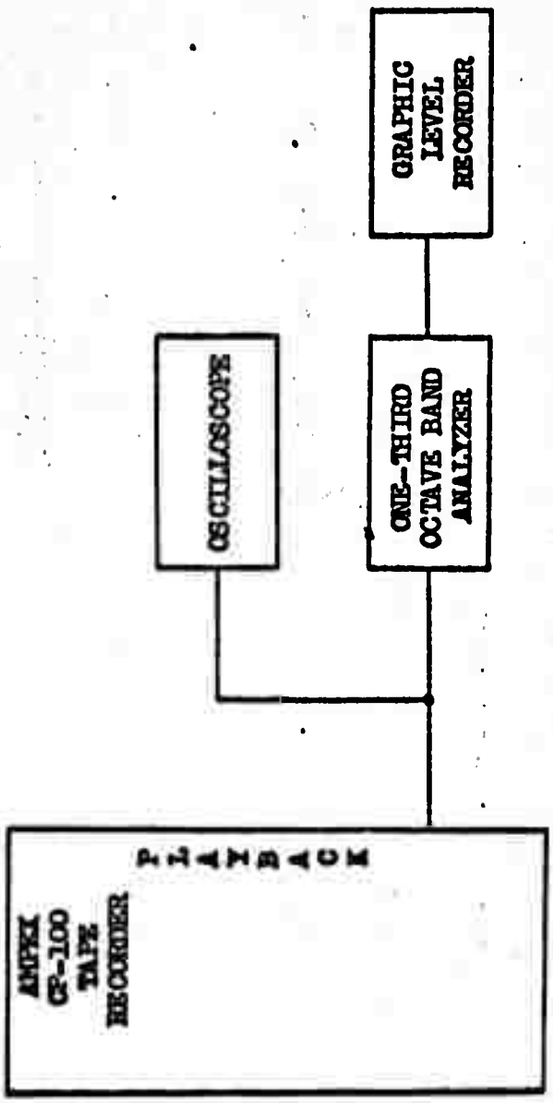

CALC			REVISED.	DATE	Figure 12. Block Diagram of Data Reduction Equipment - One-Third Octave Band Sound Pressure Level Data.
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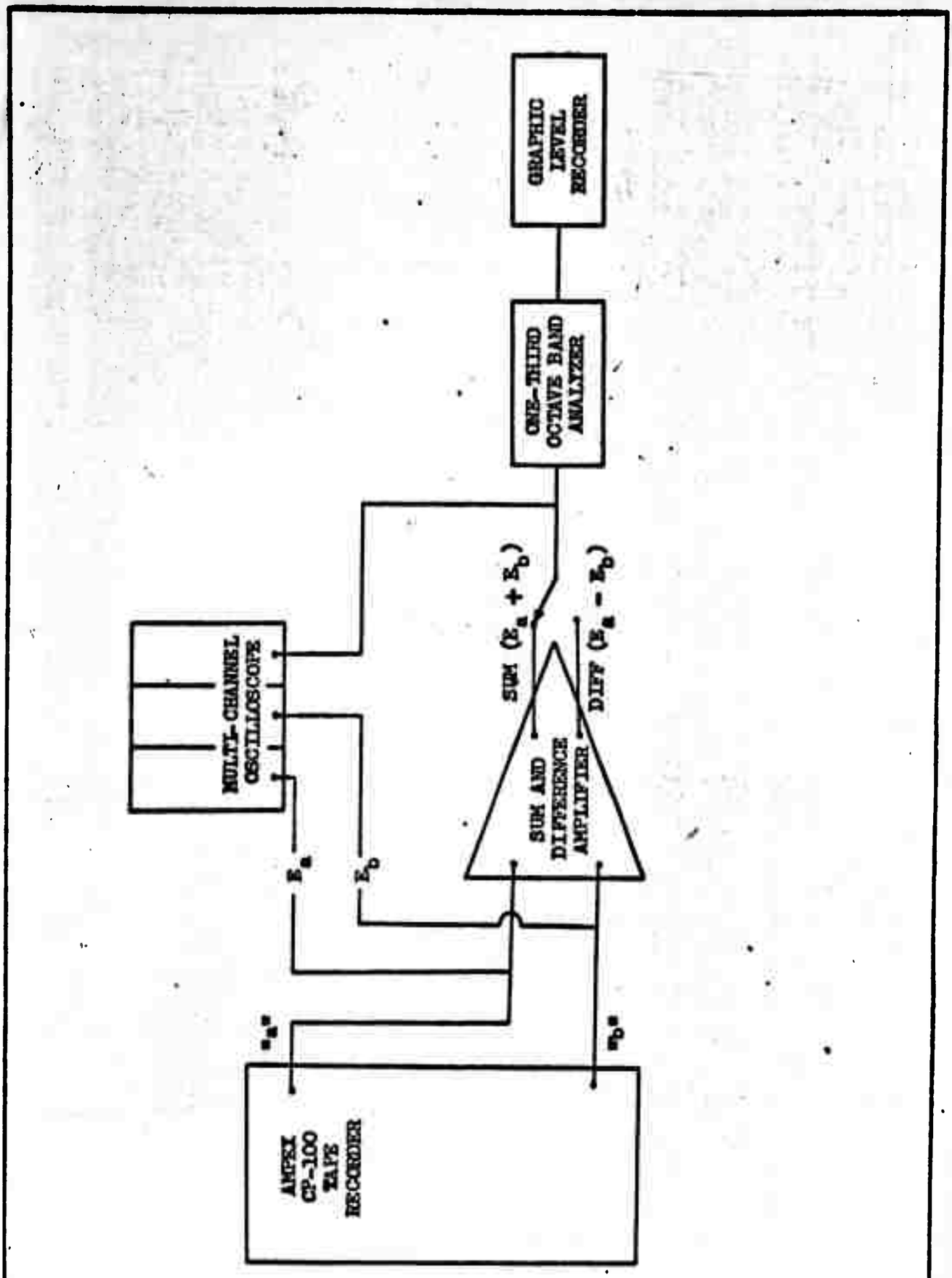

CALC			REVISED.	DATE	Figure 13. Block diagram of data reduction equipment -- Space correlation data.
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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS

Transducer Location: #2

Correlation No.	305	309	311	323	461	467	468	473	474	485	486		
Mach No.	0.8	0.85	0.9	0.825	0.8	0.84	0.86	0.88	0.9	0.96	0.98		
α	+4	+4	+4	+4	+4	+4	+4	+4	+4	+4	+4		
β	0	0	0	0	-4	-4	-4	-4	-4	-4	-4		
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	125.0	133.5	131.0	129.0	127.0	133.0	137.5	137.0	131.0	120.5	120.0		
50	126.0	135.5	133.0	130.5	129.0	134.5	138.5	138.0	132.0	120.5	120.5		
63	127.5	135.0	133.5	131.0	129.5	134.5	138.5	138.0	133.5	122.5	122.0		
80	128.0	136.5	134.5	132.5	131.0	136.0	140.5	140.0	135.0	119.0	119.5		
100	128.5	137.0	135.5	133.5	131.0	136.0	141.0	140.0	135.5	118.5	118.0		
125	129.0	138.0	136.5	134.0	131.5	137.0	142.0	139.5	136.5	118.5	118.0		
160	131.5	140.0	137.5	136.5	133.0	138.0	142.0	139.0	137.0	118.0	118.0		
200	135.0	143.5	138.5	140.5	136.0	141.0	143.5	139.5	138.0	118.0	119.0		
250	133.0	143.5	139.0	137.5	134.0	139.0	142.0	140.0	139.0	118.0	119.0		
320	135.0	141.0	140.5	137.0	134.5	139.0	142.5	141.0	140.5	119.0	119.5	—	—
400	134.5	141.0	141.5	136.5	135.0	139.0	142.5	141.5	141.5	120.5	120.5		
500	135.0	141.0	142.0	137.0	135.5	138.5	143.0	142.5	142.5	122.5	122.0		
630	135.5	142.0	142.5	138.0	135.5	139.5	143.5	144.0	144.5	122.5	122.5		
800	137.0	143.0	143.5	139.0	137.0	141.0	145.0	146.0	147.0	125.0	125.5		
1000	138.5	143.0	143.0	140.0	138.0	141.5	145.0	147.0	147.0	128.5	128.0		
1250	141.0	143.5	143.5	141.5	141.0	142.5	145.5	147.0	146.5	132.0	132.0		
1600	144.5	145.0	145.0	144.5	145.0	145.0	146.0	146.5	146.5	137.5	137.0		
2000	147.5	147.5	147.0	147.0	148.5	149.5	149.0	148.5	148.5	144.5	144.5		
2500	149.0	150.0	150.5	149.0	149.0	151.5	150.5	150.0	150.0	140.5	141.0		
ESPL	153.5	156.0	155.5	154.0	153.5	156.0	157.0	156.5	156.5	147.0	146.5		

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #4

Correlation No.	457	464	465	471									
Mach No.	0.75	0.82	0.84	0.88									
α	-4	-4	-4	-4									
β	-4	-4	-4	-4									
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	125.5	125.5	125.5	129.5									
50	125.5	126.0	126.0	130.0									
63	125.5	126.0	126.5	128.5									
80	125.0	127.0	126.5	129.5									
100	125.0	127.0	127.0	129.0									
125	126.0	127.0	127.5	129.0									
160	128.0	130.5	130.0	129.5									
200	131.0	135.5	135.0	133.0									
250	131.0	132.5	132.5	130.5									
320	133.5	134.5	132.5	130.0									
400	133.5	134.0	132.0	129.5									
500	133.5	132.5	130.5	128.5									
630	133.5	130.5	130.5	128.0									
800	134.0	132.0	131.0	130.0									
1000	133.5	133.0	132.0	132.0									
1250	135.5	135.5	135.0	135.5									
1600	142.0	140.5	140.0	139.5									
2000	141.0	141.0	141.5	142.5									
2500	136.5	137.5	138.0	139.0									
ΣSPL	147.5	147.5	147.0	147.5									

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #5

Correlation No.	457	458	464	465									
Mach No.	0.75	0.8	0.82	0.84									
α	-4	-4	-4	-4									
θ	-4	-4	-4	-4									
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	133.5	133.5	133.5	133.5									
50	133.5	134.0	134.0	133.5									
63	133.5	133.0	133.5	133.5									
80	134.0	134.5	134.0	133.5									
100	133.0	133.5	133.0	133.0									
125	132.0	133.0	133.0	133.0									
160	133.0	134.0	134.0	133.5									
200	134.5	136.5	137.0	136.5									
250	135.0	136.0	135.0	134.5									
320	136.5	136.5	136.5	134.5									
400	136.5	136.5	136.5	134.5									
500	135.5	135.5	135.0	133.0									
630	135.0	134.5	133.5	132.5									
800	135.0	134.0	134.0	133.0									
1000	135.0	134.5	134.0	133.5									
1250	137.0	135.5	135.0	134.0									
1600	140.0	139.0	138.0	137.5									
2000	140.0	140.5	140.5	142.5									
2500	137.0	136.5	138.5	138.5									
ΣSPL	148.5	148.5	149.0	148.5									

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #7

Correlation No.	490	495	496	501	502								
Mach No.	1.0	1.04	1.04	1.08	1.08								
α	0	-4	0	-4	0								
β	-4	-4	-4	-4	-4								
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	113.0	119.5	113.0	121.0	114.0								
50	113.0	120.0	113.5	123.0	114.5								
63	114.5	119.5	114.0	122.5	115.0								
80	114.0	121.0	114.0	124.5	116.0								
100	114.5	121.5	114.5	125.5	116.0								
125	115.0	122.0	116.0	126.5	117.0								
160	116.0	123.0	116.0	127.0	117.5								
200	117.0	124.0	117.5	127.0	118.5								
250	118.5	125.0	119.0	128.5	120.0								
320	119.5	126.5	120.0	129.5	121.0								
400	120.5	127.5	121.0	130.5	122.5								
500	122.0	128.0	122.5	131.5	123.5								
630	123.5	129.0	123.5	132.5	125.5								
800	126.0	131.0	127.0	134.5	127.5								
1000	128.0	133.0	128.5	137.0	129.0								
1250	130.5	136.5	131.0	141.5	131.5								
1600	135.5	142.0	135.5	150.5	135.5								
2000	144.5	152.5	146.0	160.0	146.0								
2500	142.0	152.0	142.5	150.5	145.0								
ΣSPL	146.5	155.0	148.0	160.5	149.0								

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #8

Correlation No.	457	465	472											
Mach No.	0.75	0.84	0.88											
α	-4	-4	-4											
β	-4	-4	-4											
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR													
40	120.5	136.5	130.5											
50	122.5	139.5	132.5											
63	125.0	140.5	133.0											
80	123.5	141.0	133.5											
100	123.5	142.0	134.0											
125	124.5	143.0	135.0											
160	128.0	146.5	136.5											
200	131.0	151.5	139.0											
250	131.0	149.0	137.0											
320	133.5	149.5	136.0											
400	133.5	148.0	135.5											
500	134.0	144.0	134.5											
630	135.0	140.5	132.5											
800	137.0	140.0	134.0											
1000	138.0	140.0	135.0											
1250	142.0	142.5	137.5											
1600	146.0	147.0	140.5											
2000	145.0	147.5	142.5											
2500	141.0	142.5	138.0											
ΣSPL	151.0	158.5	149.5											

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #9

Correlation No.	498	499	504										
Mach No.	1.06	1.06	0.725										
α	+4	0	+4										
β	-4	-4	-4										
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	130.5	121.5	119.5										
50	131.5	122.5	120.5										
63	131.5	122.0	121.0										
80	132.0	122.5	121.5										
100	132.5	123.0	121.5										
125	134.0	123.0	123.0										
160	134.0	123.5	125.5										
200	135.5	124.0	128.0										
250	136.5	125.5	129.5										
320	137.5	126.5	131.5										
400	138.5	127.5	132.5										
500	138.5	127.5	131.5										
630	138.5	128.5	131.0										
800	139.5	130.5	132.0										
1000	140.0	131.5	133.0										
1250	140.5	132.5	135.5										
1600	142.5	136.0	140.0										
2000	147.5	144.0	139.0										
2500	144.0	141.0	137.0										
ΣSPL	152.5	147.0	146.0										

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #12

Correlation No.	489	495	500	501									
Mach No.	1.0	1.04	1.06	1.08									
α	-4	-4	-4	-4									
β	-4	-4	-4	-4									
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	112.0	113.5	118.5	114.0									
50	112.0	114.0	119.5	115.0									
63	113.0	114.0	120.5	116.0									
80	114.0	115.5	121.5	117.0									
100	114.5	116.5	122.0	117.0									
125	117.0	117.5	123.0	119.5									
160	116.0	117.5	123.0	119.5									
200	118.5	118.5	124.0	120.0									
250	120.0	120.0	124.5	121.5									
320	120.5	121.5	124.5	122.5									
400	122.0	123.0	125.5	123.5									
500	123.5	124.0	126.0	124.5									
630	125.0	124.5	126.0	125.5									
800	127.5	127.0	127.5	128.0									
1000	130.5	129.5	129.5	131.0									
1250	134.0	133.0	132.5	134.5									
1600	139.0	138.0	138.5	143.0									
2000	148.0	147.5	150.5	152.0									
2500	147.0	146.5	144.0	142.5									
ΣSPL	151.0	150.5	151.5	153.0									

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #14

Correlation No.	404	408	491	492	497								
Mach No.	0.95	1.08	1.0	1.02	1.04								
α	+4	+4	+4	+4	+4								
β	-4	-4	-4	-4	-4								
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DIB RE: .0002 MICROBAR												
40	117.0	124.0	119.0	119.0	120.0								
50	118.0	125.0	119.5	120.0	121.0								
63	118.0	125.0	120.0	121.0	121.0								
80	119.0	127.5	121.5	122.0	123.0								
100	120.5	128.5	122.5	123.0	124.0								
125	121.0	129.0	123.5	124.5	125.5								
160	122.0	130.5	124.5	125.5	126.0								
200	123.5	131.5	126.0	126.5	127.5								
250	124.5	133.0	127.0	127.0	128.5								
320	125.0	134.0	128.0	128.5	129.5								
400	126.0	135.0	129.0	130.0	130.5								
500	127.0	136.0	130.0	131.0	132.0								
630	128.0	137.0	131.0	132.0	133.0								
800	130.0	138.0	132.5	133.5	134.0								
1000	132.0	139.0	134.5	135.0	136.0								
1250	133.5	140.5	136.0	137.0	137.5								
1600	137.0	142.0	138.5	139.0	140.0								
2000	141.5	146.0	143.5	144.0	145.0								
2500	142.5	148.0	145.0	145.0	146.0								
ΣSPL	146.5	152.5	149.0	149.0	150.0								

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #16

Correlation No.	491	492	497
Mach No.	1.0	1.02	1.04
α	+4	+4	+4
β	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR		
40	114.5	114.5	115.0
50	115.0	115.5	115.0
63	116.5	116.5	116.5
80	116.0	116.0	116.5
100	116.5	117.0	117.5
125	117.5	118.0	118.5
160	118.0	118.5	119.0
200	119.0	119.5	120.5
250	120.0	120.0	121.5
320	121.5	122.0	122.5
400	122.5	123.0	123.5
500	124.0	124.0	125.0
630	124.0	125.0	126.0
800	127.5	128.0	128.5
1000	131.0	131.0	131.0
1250	134.0	135.0	134.0
1600	139.0	138.5	138.0
2000	145.0	145.0	145.0
2500	140.0	140.0	140.5
ΣSPL	147.5	147.5	147.5

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #18

Correlation No.	315	321												
Mach No.	0.95	1.08												
α	+4	+4												
β	0	0												
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR													
40	116.5	123.5												
50	117.5	124.5												
63	119.5	125.5												
80	118.5	126.0												
100	119.0	126.0												
125	119.5	126.5												
160	121.5	126.5												
200	123.0	127.0												
250	122.0	127.5												
320	125.0	128.5												
400	124.5	129.0												
500	126.5	130.5												
630	127.0	133.5												
800	129.5	134.5												
1000	131.5	134.5												
1250	134.0	135.5												
1600	138.0	140.0												
2000	147.0	144.5												
2500	141.0	142.5												
ΣSPL	149.0	148.5												

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #20

Correlation No.	356	357	360	361
Mach No.	0.8	0.85	0.9	0.95
α	0	0	0	0
β	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR			
40	122.0	124.0	125.0	121.0
50	123.5	124.5	127.0	122.5
63	123.5	125.0	127.0	122.5
80	124.5	127.0	129.0	124.0
100	125.5	128.0	130.0	125.0
125	126.0	129.0	131.0	126.0
160	127.0	129.5	131.5	126.5
200	129.5	131.0	132.5	128.0
250	129.0	131.5	133.5	128.5
320	130.5	132.5	135.0	129.5
400	131.0	133.5	136.0	130.5
500	131.0	134.0	136.5	131.0
630	131.5	134.5	137.0	131.5
800	132.5	136.0	138.0	133.0
1000	133.0	136.5	138.5	133.5
1250	134.0	137.5	139.5	134.0
1600	134.5	138.0	141.0	135.0
2000	135.5	138.5	141.5	137.5
2500	136.0	138.5	141.5	137.5
ΣSPL	144.0	147.0	149.5	145.0

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #21

Correlation No.	356	357	360	361
Mach No.	0.8	0.85	0.9	0.95
α	0	0	0	0
β	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR			
40	118.5	121.0	121.5	117.5
50	120.5	123.5	123.5	119.0
63	120.5	122.5	124.0	119.5
80	121.5	124.0	125.0	120.5
100	122.5	124.5	125.5	121.5
125	123.5	126.0	127.0	122.5
160	125.5	127.0	128.0	123.0
200	129.0	129.5	129.0	124.5
250	128.5	129.5	130.0	125.5
320	129.5	130.0	131.5	126.5
400	129.5	130.5	132.5	128.5
500	129.5	131.5	133.5	129.5
630	130.0	133.5	134.5	131.0
800	131.5	134.5	136.0	133.0
1000	133.0	135.5	137.5	134.0
1250	136.0	138.0	139.5	135.5
1600	137.5	138.5	142.0	138.0
2000	141.0	143.0	145.0	142.5
2500	149.0	144.5	147.0	144.0
ΣSPL	150.5	149.0	151.0	148.0

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #21

Correlation No.	356	357	360	361
Mach No.	0.8	0.85	0.9	0.95
α	0	0	0	0
β	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR			
40	118.5	121.0	121.5	117.5
50	120.5	123.5	123.5	119.0
63	120.5	122.5	124.0	119.5
80	121.5	124.0	125.0	120.5
100	122.5	124.5	125.5	121.5
125	123.5	126.0	127.0	122.5
160	125.5	127.0	128.0	123.0
200	129.0	129.5	129.0	124.5
250	128.5	129.5	130.0	125.5
320	129.5	130.0	131.5	126.5
400	129.5	130.5	132.5	128.5
500	129.5	131.5	133.5	129.5
630	130.0	133.5	134.5	131.0
800	131.5	134.5	136.0	133.0
1000	133.0	135.5	137.5	134.0
1250	136.0	138.0	139.5	135.5
1600	137.5	138.5	142.0	138.0
2000	141.0	143.0	145.0	142.5
2500	149.0	144.5	147.0	144.0
ΣSPL	150.5	149.0	151.0	148.0

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #23

Correlation No.	359	362	363	366
Mach No.	0.9	0.95	1.0	1.08
∝	0	0	0	0
β	+4	+4	+4	+4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	**ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR**			
40	119.5	121.0	121.5	122.5
50	121.5	122.0	123.0	123.5
63	121.5	122.0	123.5	124.0
80	123.0	123.5	125.0	126.0
100	123.0	124.5	125.0	127.0
125	124.0	125.0	126.0	127.5
160	124.5	125.5	127.0	128.0
200	125.5	127.0	128.0	130.0
250	126.5	128.0	129.0	131.0
320	127.5	129.5	130.0	132.5
400	129.0	130.5	131.5	133.5
500	130.0	132.0	132.5	135.5
630	132.5	134.5	135.5	138.5
800	136.5	139.0	140.5	144.0
1000	137.0	140.0	143.0	145.5
1250	134.5	136.0	138.0	139.5
1600	135.0	135.5	137.0	138.0
2000	137.0	139.0	140.0	141.0
2500	137.0	138.5	138.0	138.5
ΣSPL	145.0	147.0	148.5	150.5

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #26

Correlation No.	356	357											
Mach No.	0.8	0.85											
α	0	0											
β	-4	-4											
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	137.0	122.0											
50	139.5	123.5											
63	139.5	123.0											
80	140.5	123.0											
100	141.0	125.0											
125	143.0	126.5											
160	146.0	127.5											
200	150.0	130.5											
250	151.0	128.0											
320	151.0	129.0											
400	150.0	129.5											
500	147.0	129.5											
630	144.5	130.0											
800	142.0	131.0											
1000	141.5	132.0											
1250	143.5	135.5											
1600	145.0	136.5											
2000	144.5	138.0											
2500	139.0	135.0											
ΣSPL	158.5	144.5											

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #27

Correlation No.	458	460	461	462	463	464	465	466	467	468	469	470	471
Mach No.	0.8	0.8	0.8	0.82	0.82	0.82	0.84	0.84	0.84	0.86	0.86	0.86	0.88
α	-4	0	+4	+4	0	-4	-4	0	+4	+4	0	-4	-4
β	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	141.5	138.5	138.0	139.5	140.0	140.0	141.0	141.0	140.5	143.0	141.0	143.5	144.0
50	142.5	140.5	140.5	141.0	140.5	142.0	142.5	141.5	142.5	144.5	142.0	145.5	145.5
63	141.5	141.0	140.5	141.5	141.0	142.0	143.5	142.5	143.5	144.0	143.0	145.5	145.5
80	143.0	142.0	142.0	143.0	142.5	144.0	144.5	144.0	144.5	146.0	145.0	147.0	147.0
100	144.5	143.5	143.5	144.5	144.5	145.0	145.5	145.0	146.0	147.5	146.0	148.5	148.5
125	145.5	144.5	144.0	145.0	145.0	146.5	147.0	146.0	146.5	148.0	147.0	149.0	149.5
160	146.5	145.0	145.5	146.0	146.0	147.0	148.0	147.0	148.0	149.5	148.0	150.0	150.0
200	148.0	147.0	147.0	148.0	148.0	149.0	149.5	148.5	149.0	150.5	149.0	151.0	151.5
250	149.0	148.5	148.5	149.0	149.0	150.0	151.0	149.5	150.5	151.0	150.0	152.0	152.0
320	150.5	150.5	151.0	151.5	151.0	151.5	152.5	151.5	152.5	153.0	152.0	153.5	153.5
400	151.5	151.5	152.5	152.5	152.5	153.0	153.5	152.5	153.0	153.5	153.0	153.5	154.0
500	152.0	152.0	153.0	153.0	153.0	152.5	153.0	153.0	153.0	153.5	153.0	153.0	153.5
630	152.0	152.0	152.0	152.0	152.5	151.5	151.5	152.0	151.5	151.5	151.5	151.0	151.5
800	151.5	150.5	150.0	150.0	150.5	149.5	150.0	150.0	149.5	149.5	149.5	150.0	149.5
1000	147.0	148.0	147.5	147.5	147.5	147.0	148.0	147.5	147.5	147.5	147.5	146.0	147.5
1250	145.5	146.5	146.5	146.5	146.5	146.0	146.5	146.5	146.5	147.0	147.0	146.5	146.0
1600	145.0	146.0	146.0	146.0	146.0	145.0	145.5	146.0	146.0	146.0	146.0	145.5	145.5
2000	145.0	145.5	145.0	145.0	145.5	145.5	146.0	145.5	145.5	145.5	145.5	145.5	145.5
2500	143.5	144.0	144.0	144.0	144.0	145.0	145.0	144.5	144.5	144.0	144.0	144.5	144.0
ΣSPL	161.0	161.0	161.0	161.0	161.0	161.0	162.0	162.0	162.0	162.0	162.0	162.5	163.0

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #27

Correlation No.	472	473	476	482
Mach No.	0.88	0.88	0.9	0.94
α	0	+4	-4	-4
β	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR			
40	143.0	145.5	148.5	126.0
50	144.5	147.5	149.5	127.0
63	145.0	147.0	150.0	128.5
80	146.5	148.0	151.0	129.0
100	148.0	149.0	151.5	130.0
125	149.0	150.0	152.0	130.5
160	149.5	150.5	152.0	132.0
200	150.5	151.0	152.5	132.5
250	151.5	152.0	153.5	133.5
320	153.0	153.0	154.5	135.0
400	154.0	153.5	154.5	136.0
500	153.5	153.0	153.5	136.5
630	151.5	151.0	151.0	136.5
800	149.5	149.0	149.0	137.5
1000	147.5	147.5	148.0	138.0
1250	146.5	146.5	146.5	138.5
1600	145.5	145.5	145.5	139.0
2000	145.0	145.0	145.5	139.5
2500	144.0	143.5	144.0	141.0
ΣSPL	162.5	163.0	164.0	149.0

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #28

Correlation No.	456	457	458	460	463	464	466	477					
Mach No.	0.75	0.75	0.8	0.8	0.82	0.82	0.84	0.92					
α	0	4	4	0	0	4	0	4					
β	4	4	4	4	4	4	4	4					
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	129.0	129.5	134.5	129.5	136.5	140.0	146.5	119.5					
50	130.5	130.5	135.5	130.5	137.5	142.0	148.0	120.0					
63	131.0	131.0	136.5	131.0	138.5	143.5	149.5	120.5					
80	132.5	132.0	138.0	132.5	139.5	144.5	151.0	122.0					
100	133.0	133.0	139.0	133.5	140.5	145.5	152.0	123.0					
125	134.0	134.0	140.5	134.5	141.5	147.0	153.0	123.5					
160	135.5	135.0	141.5	136.0	143.0	148.0	153.5	124.0					
200	137.0	136.5	144.0	138.5	146.0	150.0	155.0	125.5					
250	137.5	137.0	145.0	139.0	146.0	150.5	155.5	126.5					
320	139.5	138.5	146.5	140.5	147.0	152.5	156.5	128.0					
400	140.0	139.5	148.0	141.0	149.0	153.5	156.5	129.0					
500	140.5	140.0	148.5	142.0	149.5	153.5	156.5	130.5					
630	140.5	140.5	149.5	142.5	149.5	153.5	155.5	132.0					
800	141.5	141.0	150.0	143.0	149.0	153.5	154.0	133.0					
1000	142.0	141.0	150.0	142.5	148.5	153.0	153.0	134.0					
1250	143.5	142.5	150.5	143.0	148.5	153.0	152.5	135.5					
1600	146.0	145.0	151.5	145.0	149.0	153.5	152.5	138.0					
2000	145.5	145.0	151.0	145.5	149.5	153.0	152.5	141.0					
2500	145.5	145.5	149.0	145.0	148.0	152.0	151.5	143.0					
ΣSPL	154.0	153.0	160.0	154.0	159.5	164.0	166.0	147.0					

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #29

Correlation No.	455	456	457	461	462								
Mach No.	0.75	0.75	0.75	0.8	0.82								
α	+4	0	-4	+4	+4								
β	-4	-4	-4	-4	-4								
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	132.5	130.0	129.0	118.5	116.5								
50	133.5	131.5	131.5	121.0	117.5								
63	134.0	132.5	131.5	121.5	119.0								
80	136.0	134.0	132.0	122.0	119.5								
100	136.5	135.0	133.5	122.5	120.5								
125	137.0	135.5	134.5	123.5	121.0								
160	139.0	137.0	136.5	126.0	123.0								
200	141.0	139.5	139.5	129.5	126.0								
250	142.0	141.0	139.5	129.0	125.5								
320	143.5	142.5	142.5	130.5	126.5								
400	144.0	143.5	143.5	130.5	127.0								
500	144.0	144.0	143.5	129.5	127.5								
630	144.0	144.0	143.5	130.5	128.5								
800	144.5	144.0	144.0	131.5	130.0								
1000	144.5	144.0	143.5	132.5	131.0								
1250	145.0	145.0	144.5	134.5	133.0								
1600	148.0	148.5	148.0	138.0	136.5								
2000	147.5	147.5	147.5	139.5	138.5								
2500	147.5	147.0	147.0	139.5	138.5								
ΣSPL	156.0	156.0	155.0	145.5	144.5								

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #30

Correlation No.	356	357	362	363	364	365							
Mach No.	0.8	0.85	0.95	1.0	1.0	1.08							
α	0	0	0	0	0	0							
β	-4	-4	+4	+4	-4	-4							
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	120.5	124.0	141.0	141.0	141.0	137.5							
50	122.0	126.0	142.5	142.0	142.5	138.0							
63	123.0	127.5	143.0	143.0	143.0	139.0							
80	123.5	128.0	145.0	145.0	145.0	140.5							
100	124.5	130.5	146.5	146.5	146.0	141.0							
125	128.0	134.0	146.5	146.5	146.5	142.0							
160	131.0	136.0	147.0	147.5	147.0	142.0							
200	135.5	139.5	148.0	148.0	147.5	143.0							
250	137.0	138.0	148.5	148.5	148.0	143.0							
320	138.5	137.0	149.0	148.5	148.5	144.0							
400	138.5	135.5	149.0	148.5	148.0	144.0							
500	137.0	135.0	148.5	148.5	147.5	143.5							
630	136.0	135.5	149.5	149.5	148.0	144.0							
800	136.0	137.0	149.5	149.0	148.0	144.5							
1000	138.0	139.5	148.5	148.5	147.0	144.0							
1250	142.0	144.5	148.0	148.0	146.5	144.5							
1600	145.0	149.0	148.0	148.0	147.0	145.5							
2000	144.0	147.5	148.0	148.0	147.0	145.5							
2500	140.5	143.5	149.0	150.5	147.5	145.0							
ΣSPL	151.0	154.0	160.5	160.5	160.0	155.5							

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #31

Correlation No.	467	468	473	480									
Mach No.	0.84	0.86	0.88	0.94									
α	+4	+4	+4	+4									
β	-4	-4	-4	-4									
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	131.0	134.5	134.5	119.5									
50	132.0	136.0	136.0	121.0									
63	133.5	136.5	136.5	121.0									
80	135.0	137.5	138.0	121.5									
100	136.0	138.5	138.0	122.0									
125	137.0	139.5	139.0	123.0									
160	138.0	140.0	139.5	124.0									
200	140.0	141.5	140.5	125.5									
250	140.0	142.0	141.0	127.0									
320	141.5	143.0	142.0	128.0									
400	141.5	143.5	142.0	128.5									
500	141.0	142.5	142.0	128.5									
630	140.0	142.0	141.5	129.5									
800	139.5	142.0	141.5	131.0									
1000	139.5	142.0	142.0	131.5									
1250	141.0	143.0	143.0	133.5									
1600	145.0	146.0	146.0	136.0									
2000	147.5	148.0	149.5	141.0									
2500	145.5	147.5	147.5	139.5									
ΣSPL	154.0	155.5	156.0	145.5									

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #32

Correlation No.	356	357	358	406									
Mach No.	0.8	0.85	0.85	1.0									
α	0	0	0	-4									
β	-4	-4	+4	-4									
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	137.5	137.0	136.5	129.0									
50	139.5	138.5	138.5	130.5									
63	140.0	139.5	138.0	131.5									
80	141.0	140.5	139.5	130.5									
100	142.0	141.5	140.5	132.0									
125	143.0	142.5	141.5	132.5									
160	144.5	143.0	142.5	133.5									
200	146.0	145.0	144.0	134.0									
250	146.0	145.5	144.5	134.5									
320	147.5	147.0	146.0	136.5									
400	148.5	148.5	147.0	136.5									
500	149.5	149.5	148.0	139.5									
630	149.5	149.5	148.5	137.5									
800	150.0	150.0	149.0	138.5									
1000	149.0	149.5	148.5	139.5									
1250	149.5	150.0	148.5	140.0									
1600	150.0	150.5	148.5	141.0									
2000	150.5	151.5	148.5	144.0									
2500	153.0	153.5	150.0	145.5									
ΣSPL	160.5	161.0	159.5	151.5									

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #33

Correlation No.	461	467	468	469	470	471	472	473	474	475	476	480
Mach No.	0.8	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.9	0.9	0.9	0.94
α	+4	+4	+4	0	-4	-4	0	+4	+4	0	-4	+4
β	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR											
40	131.5	140.5	143.0	139.0	140.5	140.0	139.5	142.0	141.0	139.5	139.0	135.5
50	133.5	142.0	144.5	141.0	141.5	142.0	141.5	143.5	143.5	141.0	140.5	135.5
63	134.0	142.5	145.0	141.0	142.0	142.0	143.5	144.0	143.0	141.5	140.5	136.0
80	135.5	143.5	146.0	143.0	143.0	143.0	143.5	146.0	143.5	143.0	141.5	137.0
100	136.5	145.0	147.0	144.5	144.0	144.0	144.5	146.5	145.0	143.0	142.0	137.5
125	136.5	145.5	148.0	144.5	145.0	144.5	145.0	147.0	144.5	144.0	143.5	138.0
160	137.0	146.0	149.0	145.0	145.5	145.0	146.0	148.0	146.0	144.5	143.5	138.0
200	139.0	146.5	149.5	146.0	147.0	146.5	147.5	148.5	146.5	146.0	145.0	139.0
250	139.5	146.5	150.0	147.0	148.0	147.5	148.0	149.5	147.0	147.0	146.0	139.5
320	141.0	147.5	150.0	148.0	148.5	149.0	149.0	150.5	148.5	148.5	148.0	141.0
400	142.0	147.5	149.5	148.0	148.5	149.0	149.0	150.5	149.0	149.5	148.5	141.5
500	142.0	146.5	148.5	147.0	147.5	147.5	148.5	149.5	148.5	149.0	148.0	142.0
630	141.5	145.5	147.0	146.0	146.5	148.5	147.5	148.5	148.5	148.5	147.5	142.5
800	141.5	145.0	147.0	145.5	146.0	147.5	147.5	148.0	148.0	148.0	147.5	143.5
1000	141.0	145.0	146.0	145.0	146.0	146.5	146.5	147.0	147.5	147.0	146.5	134.0
1250	142.0	144.5	145.5	145.0	146.0	146.5	146.0	146.5	146.5	146.5	146.5	134.5
1600	143.5	145.0	145.5	145.0	146.5	147.0	146.0	146.5	146.0	146.5	146.5	138.0
2000	143.5	145.5	145.5	145.5	147.0	147.5	146.0	146.0	146.0	146.5	147.0	141.5
2500	143.0	145.5	145.5	146.0	147.5	147.5	146.5	145.5	145.5	146.0	146.5	137.0
ΣSPL	153.0	158.5	160.5	158.0	159.0	159.5	160.0	160.5	159.0	159.5	158.5	146.5

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #34

Correlation No.	358	362	469	472									
Mach No.	0.85	0.95	0.86	0.88									
α	0	0	0	0									
β	+4	+4	-4	-4									
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	124.0	117.0	133.0	135.0									
50	126.5	118.5	135.0	137.0									
63	126.5	119.0	135.0	136.0									
80	127.0	119.5	135.5	137.5									
100	128.5	120.0	137.0	137.5									
125	130.0	121.5	137.0	137.5									
160	131.0	122.0	137.5	138.0									
200	135.0	123.5	138.5	139.0									
250	135.0	124.5	139.0	139.5									
320	135.0	125.5	139.5	140.0									
400	134.0	126.5	140.0	139.5									
500	132.5	127.0	139.0	139.0									
630	131.5	128.5	138.5	139.0									
800	132.0	130.0	138.5	139.5									
1000	134.5	131.5	139.0	140.0									
1250	138.5	133.5	141.0	141.5									
1600	144.0	137.0	145.5	145.5									
2000	146.0	142.0	146.0	148.5									
2500	145.5	142.5	147.0	147.5									
ΣSPL	151.5	147.0	154.5	155.5									

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #35

Correlation No.	460	466	472	478
Mach No.	0.8	0.84	0.88	0.92
α	0	0	0	0
β	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR			
40	122.5	133.0	135.0	119.5
50	124.5	135.5	137.5	121.0
63	124.0	135.5	136.5	120.5
80	125.5	136.0	137.5	120.5
100	126.0	136.5	138.0	120.0
125	127.0	137.0	138.0	120.0
160	129.5	138.0	138.0	120.0
200	134.0	141.5	138.0	120.0
250	134.5	137.5	137.5	120.5
320	137.5	136.5	138.5	121.0
400	139.0	136.0	138.5	122.0
500	138.0	135.5	138.5	124.0
630	136.5	135.5	139.0	123.0
800	136.0	136.5	139.5	125.0
1000	136.5	137.0	139.5	127.5
1250	138.5	138.5	139.5	129.5
1600	143.0	142.0	140.0	132.0
2000	143.0	144.0	141.5	136.0
2500	141.0	142.5	141.5	133.0
ΣSPL	150.0	151.5	151.5	140.5

Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (continued)

Transducer Location: #36

Correlation No.	360	361	455	462	467	468	469	470	471	472	473	474	475
Mach No.	0.9	0.95	0.75	0.82	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.9	0.9
α	0	0	+4	+4	+4	+4	0	-4	-4	0	+4	+4	0
β	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	132.0	141.0	121.5	126.5	128.5	130.5	134.0	132.0	134.5	138.5	134.5	139.5	138.5
50	132.5	141.5	123.5	127.5	129.5	132.5	135.5	133.5	136.0	139.5	135.0	141.5	139.5
63	133.5	142.0	123.5	128.5	130.0	132.5	136.5	133.5	136.0	140.5	135.5	141.5	139.5
80	135.0	144.0	125.0	131.0	132.0	134.0	138.0	134.5	137.5	142.0	137.0	142.0	141.5
100	135.5	145.0	127.0	132.0	133.0	135.0	138.5	135.5	138.0	142.5	137.5	142.0	141.5
125	137.0	146.0	127.5	133.5	134.0	136.0	139.0	136.5	139.0	143.0	138.5	143.0	142.5
160	138.5	146.5	128.5	134.0	135.5	137.0	140.0	137.5	139.5	143.5	139.0	143.0	142.5
200	140.5	147.0	131.5	136.5	137.5	138.5	141.0	139.0	141.0	144.0	140.5	144.0	144.0
250	142.0	146.5	132.5	137.0	138.5	139.5	141.0	139.5	141.5	144.5	141.5	144.0	144.0
320	144.0	146.5	133.5	138.5	139.0	140.5	141.5	140.0	142.0	144.5	142.5	144.5	144.5
400	145.0	146.5	135.0	139.5	140.5	141.5	142.5	141.5	143.0	144.5	143.0	144.5	144.5
500	146.5	147.0	136.0	141.0	142.0	143.0	143.5	143.0	144.0	145.5	144.0	145.0	145.0
630	147.5	147.5	137.5	142.0	143.0	144.0	144.0	143.0	144.5	145.5	144.5	145.5	145.5
800	148.5	149.0	139.5	143.5	144.5	145.5	145.5	144.5	145.5	147.0	146.5	147.0	147.0
1000	149.5	150.5	141.0	145.5	147.0	148.0	147.5	146.5	147.5	149.0	149.0	148.0	149.5
1250	151.5	151.5	144.0	148.5	150.0	151.0	150.5	149.0	150.0	151.5	151.5	152.0	152.0
1600	154.0	152.5	147.0	151.5	152.5	153.5	153.0	151.5	152.0	153.5	153.5	153.5	153.5
2000	156.0	153.5	149.5	154.0	154.5	155.0	155.0	153.0	154.0	155.0	155.0	155.0	155.0
2500	158.5	155.5	152.0	156.0	156.5	157.0	156.5	155.0	156.0	157.0	157.0	156.5	157.0
OSPL	162.5	162.0	155.0	160.0	160.0	161.5	161.0	160.0	160.5	162.0	161.5	162.0	162.0

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Table VI. ACOUSTIC TEST RESULTS - SOUND PRESSURE LEVELS (concluded)

Transducer Location: #36

Correlation No.	476	477	478	479	481	482	485						
Mach No.	0.9	0.92	0.92	0.92	0.94	0.94	0.96						
α	-4	-4	0	+4	0	-4	+4						
β	-4	-4	-4	-4	-4	-4	-4						
ONE THIRD OCTAVE BAND CENTER FREQUENCY	ONE THIRD OCTAVE BAND SOUND PRESSURE LEVELS - DB RE: .0002 MICROBAR												
40	136.0	141.5	139.5	139.5	136.0	135.5	121.5						
50	138.0	143.0	141.0	141.0	137.0	137.5	121.5						
63	137.0	141.5	140.5	141.5	137.0	137.5	122.5						
80	139.0	142.5	142.0	142.5	138.0	139.5	123.5						
100	140.0	142.0	142.5	143.0	138.5	140.5	124.5						
125	140.5	141.5	142.5	143.0	139.0	141.0	125.0						
160	141.0	142.0	142.5	143.5	139.0	141.5	125.5						
200	142.0	142.5	143.5	144.5	140.0	142.5	127.5						
250	143.0	143.0	143.5	144.5	140.0	142.5	128.0						
320	143.5	143.0	144.0	144.5	139.5	141.5	128.5						
400	144.0	143.0	143.5	144.5	140.0	141.5	129.5						
500	144.5	143.0	144.0	144.5	140.5	142.0	130.5						
630	145.0	143.5	144.0	144.0	141.0	142.0	131.5						
800	146.5	145.0	145.0	145.5	142.5	143.5	133.0						
1000	148.5	147.0	147.0	147.0	144.0	145.0	135.0						
1250	151.0	149.0	149.5	149.5	147.0	148.0	137.5						
1600	153.0	151.5	152.0	152.0	149.5	150.0	141.5						
2000	154.0	153.5	154.0	154.0	152.0	153.0	146.5						
2500	155.5	155.0	156.5	156.5	155.0	155.0	147.0						
ΣSPL	161.0	160.0	161.0	161.0	158.5	159.5	151.0						

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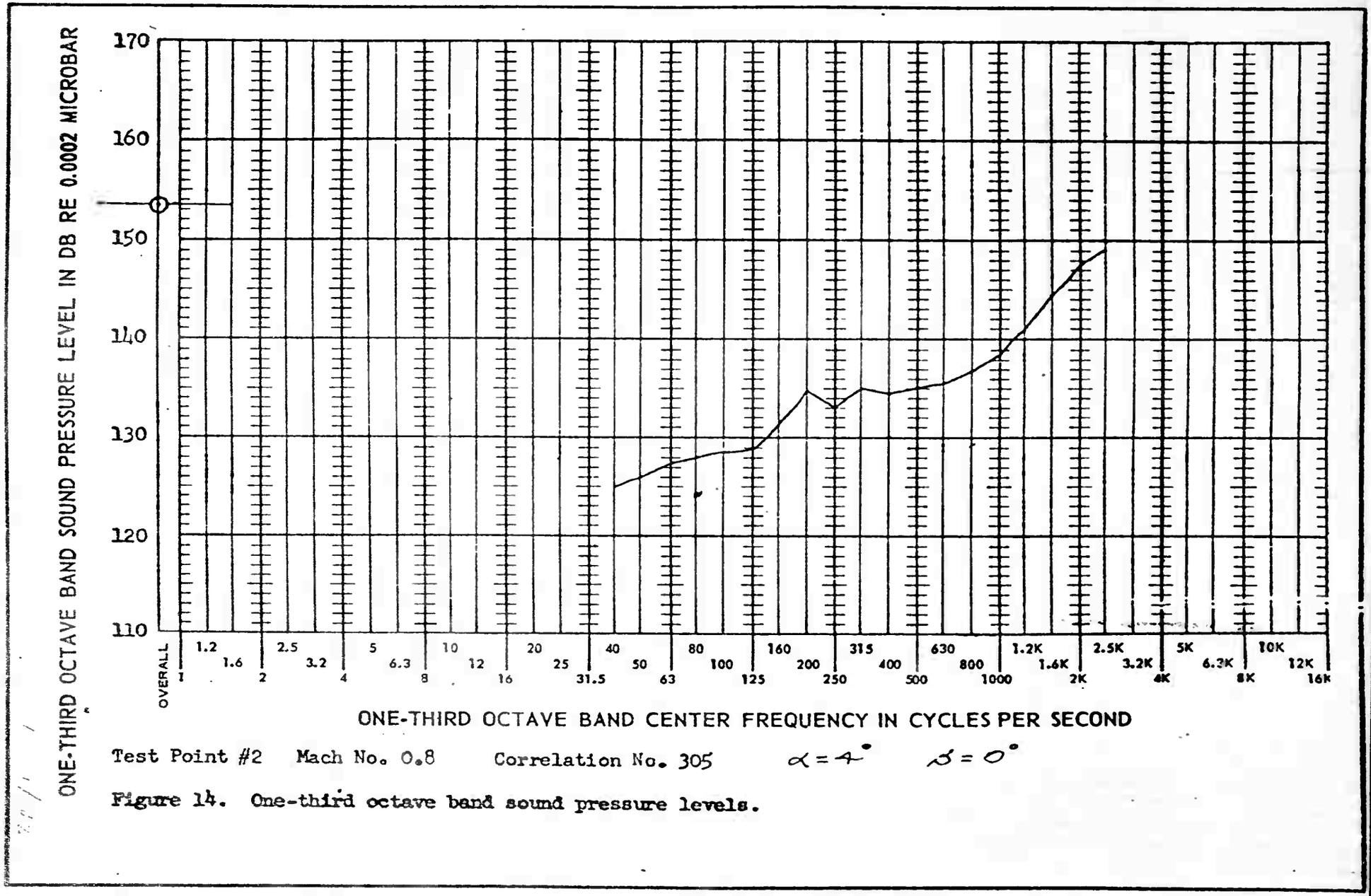
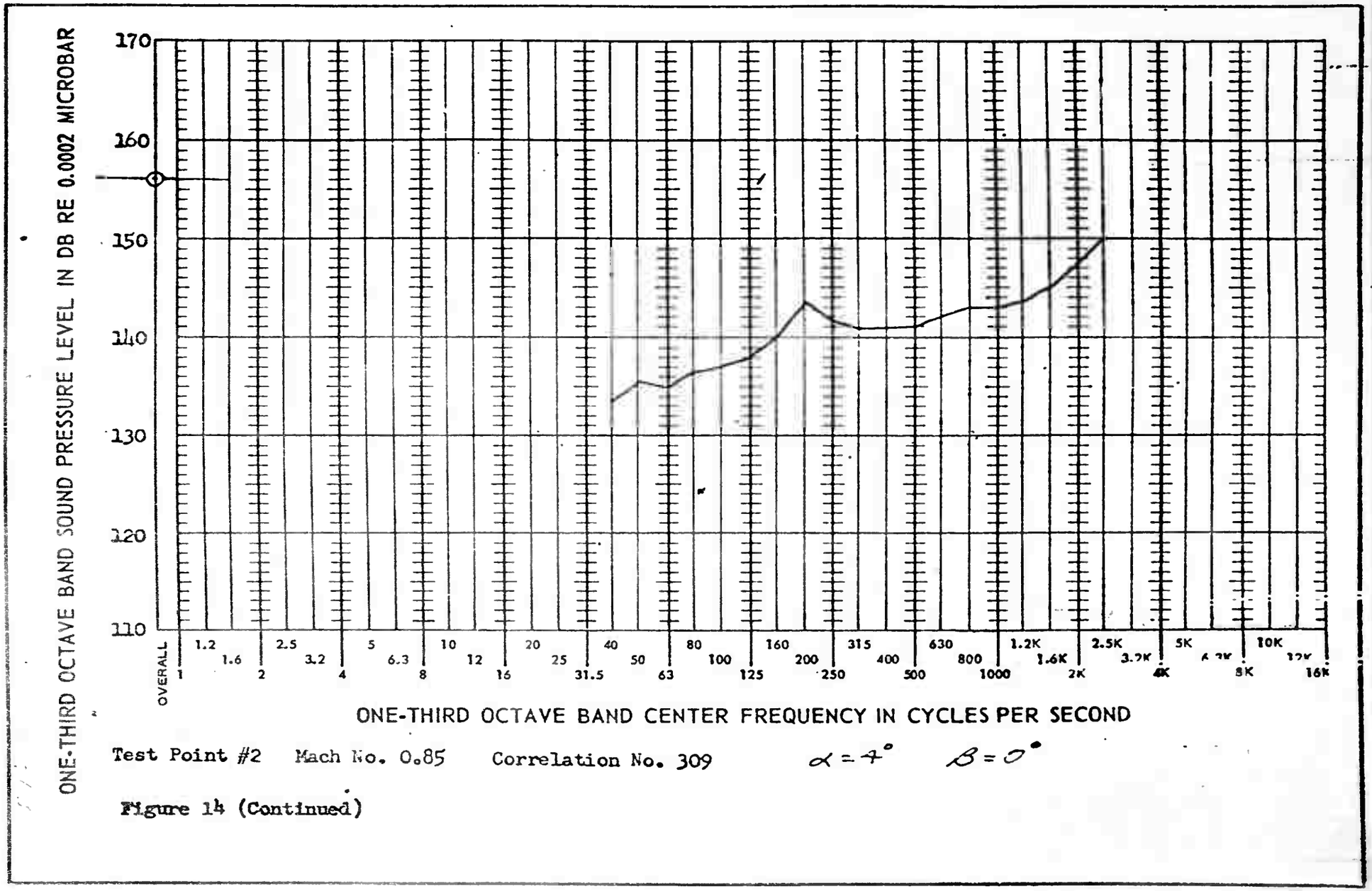
2-5535-2-17



Test Point #2 Mach No. 0.8 Correlation No. 305 $\alpha = 4^\circ$ $\delta = 0^\circ$

Figure 14. One-third octave band sound pressure levels.



Test Point #2 Mach No. 0.85 Correlation No. 309 $\alpha = 4°$ $\beta = 0°$

Figure 14 (Continued)

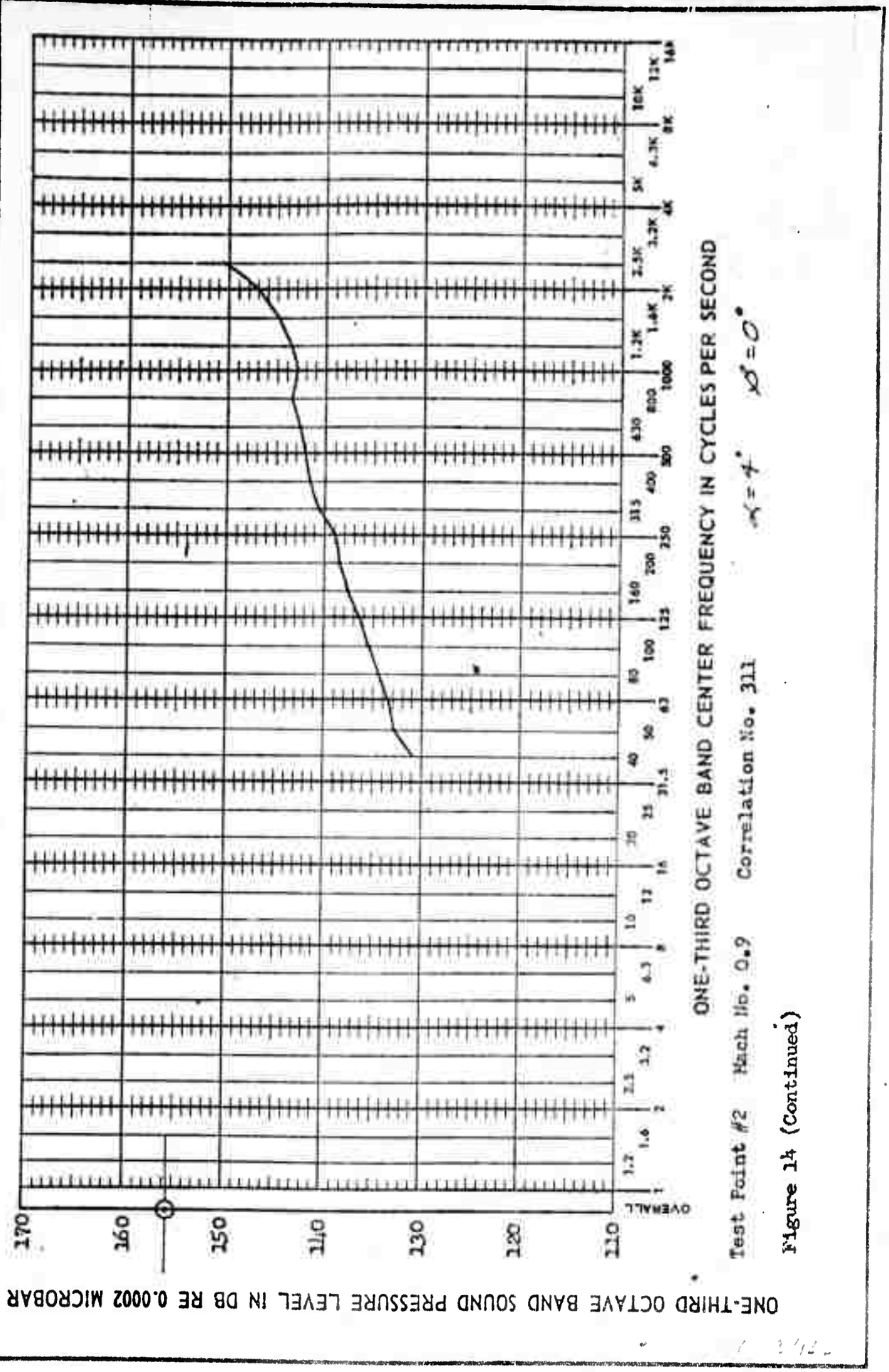
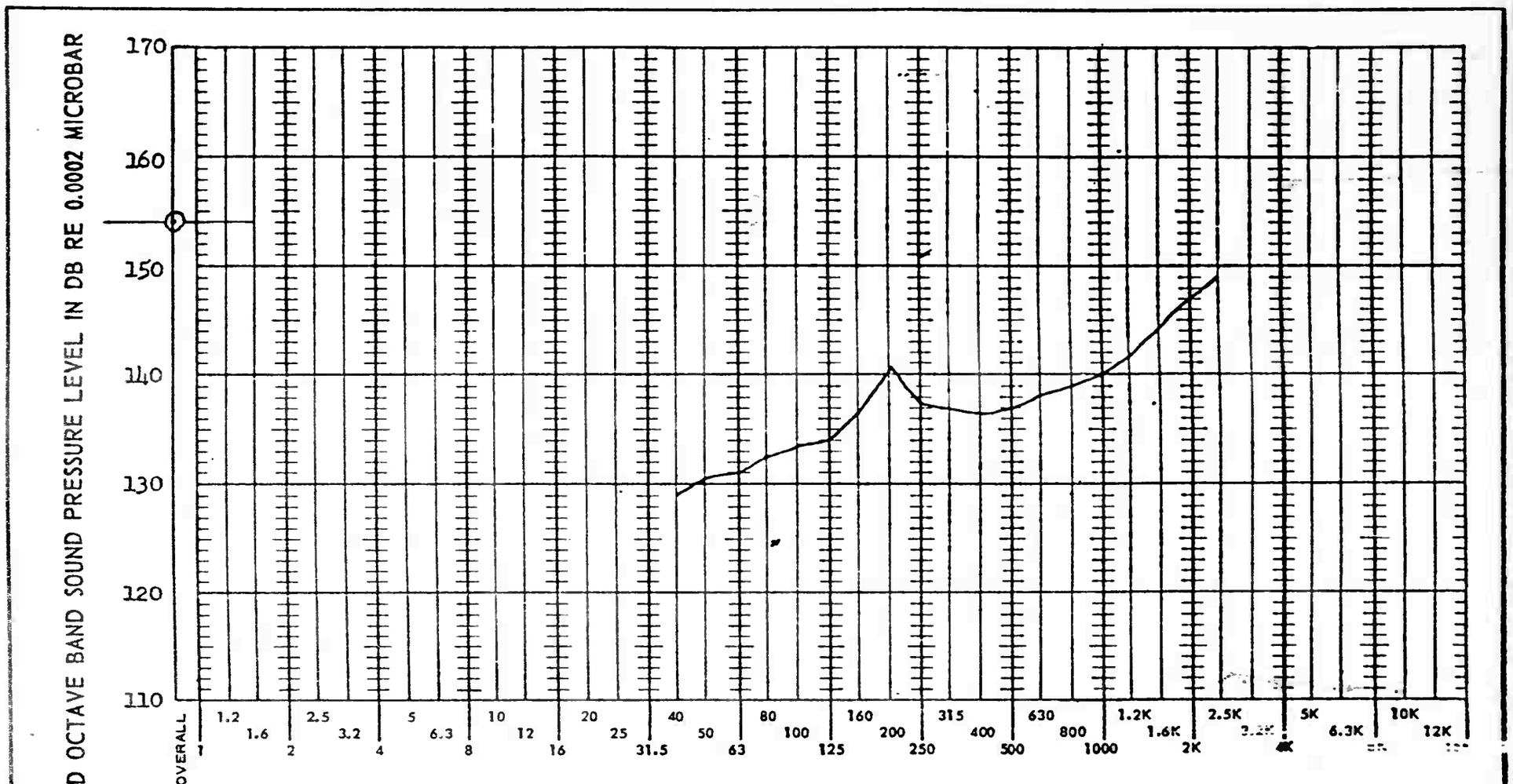
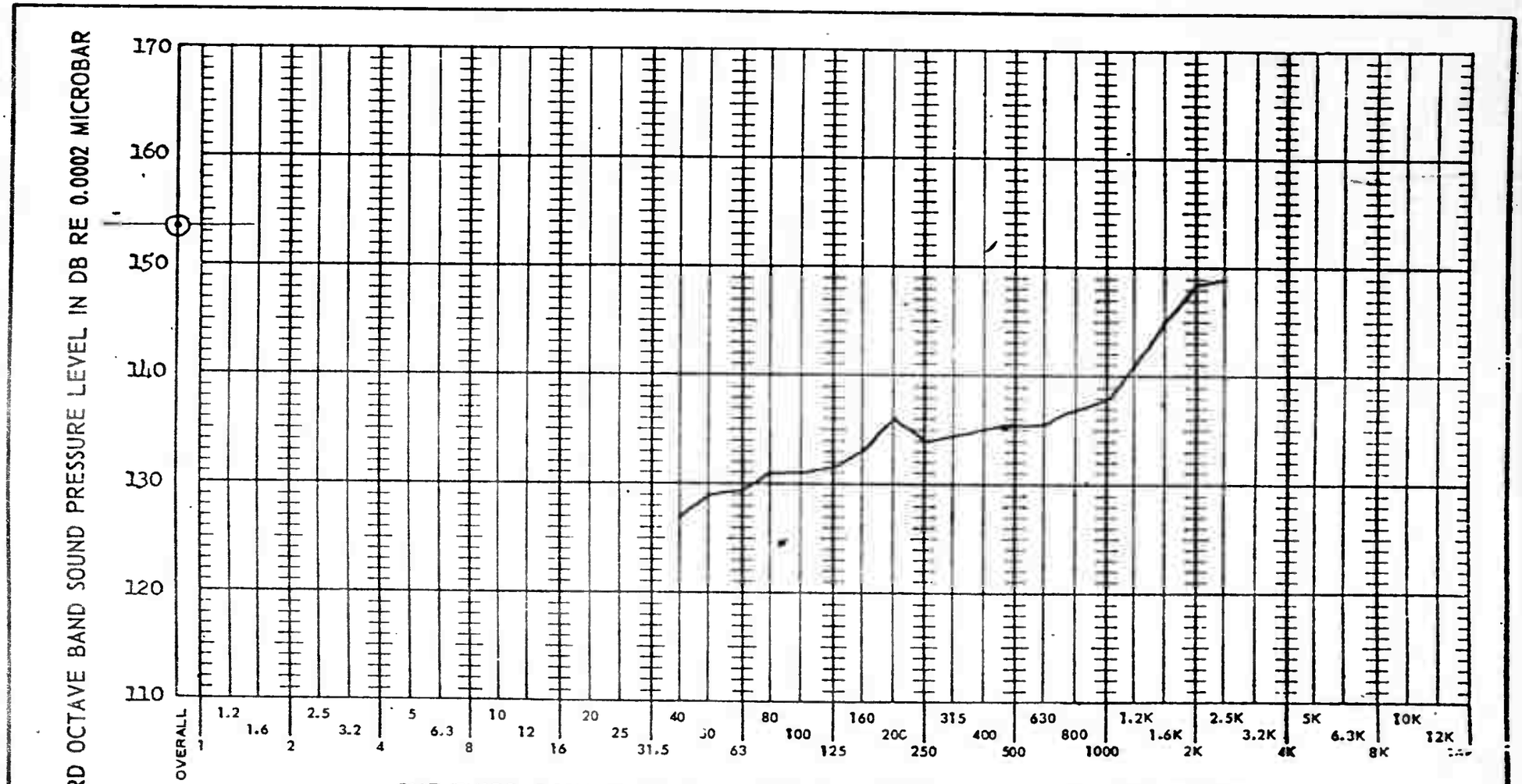


Figure 14 (Continued)



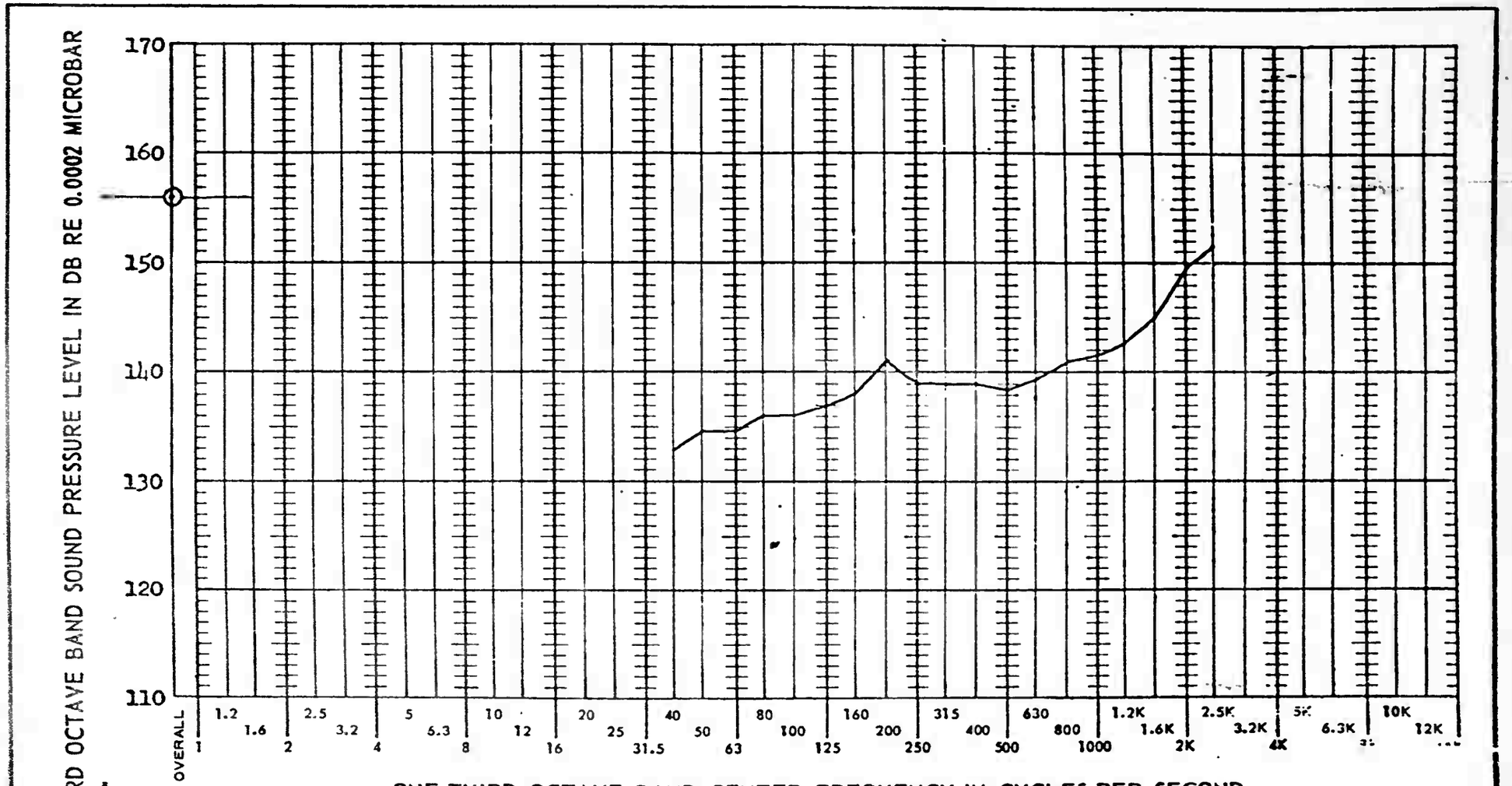
Test Point #2 Mach No. 0.825 Correlation No. 323 $\alpha = 4^\circ$ $\beta = 0^\circ$

Figure 14 (Continued)



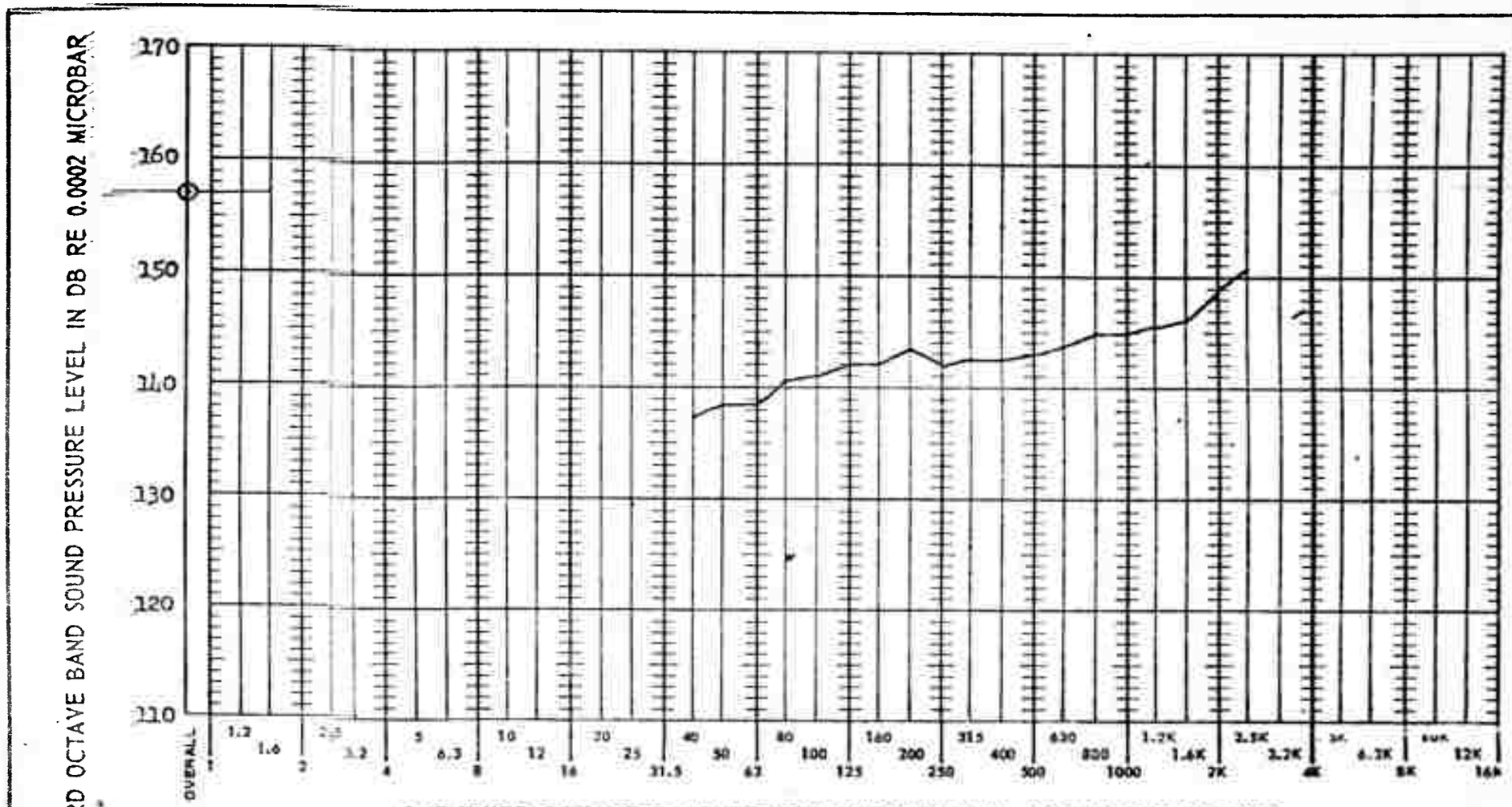
Test Point #2 Mach No. 0.8 Correlation No. 461 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



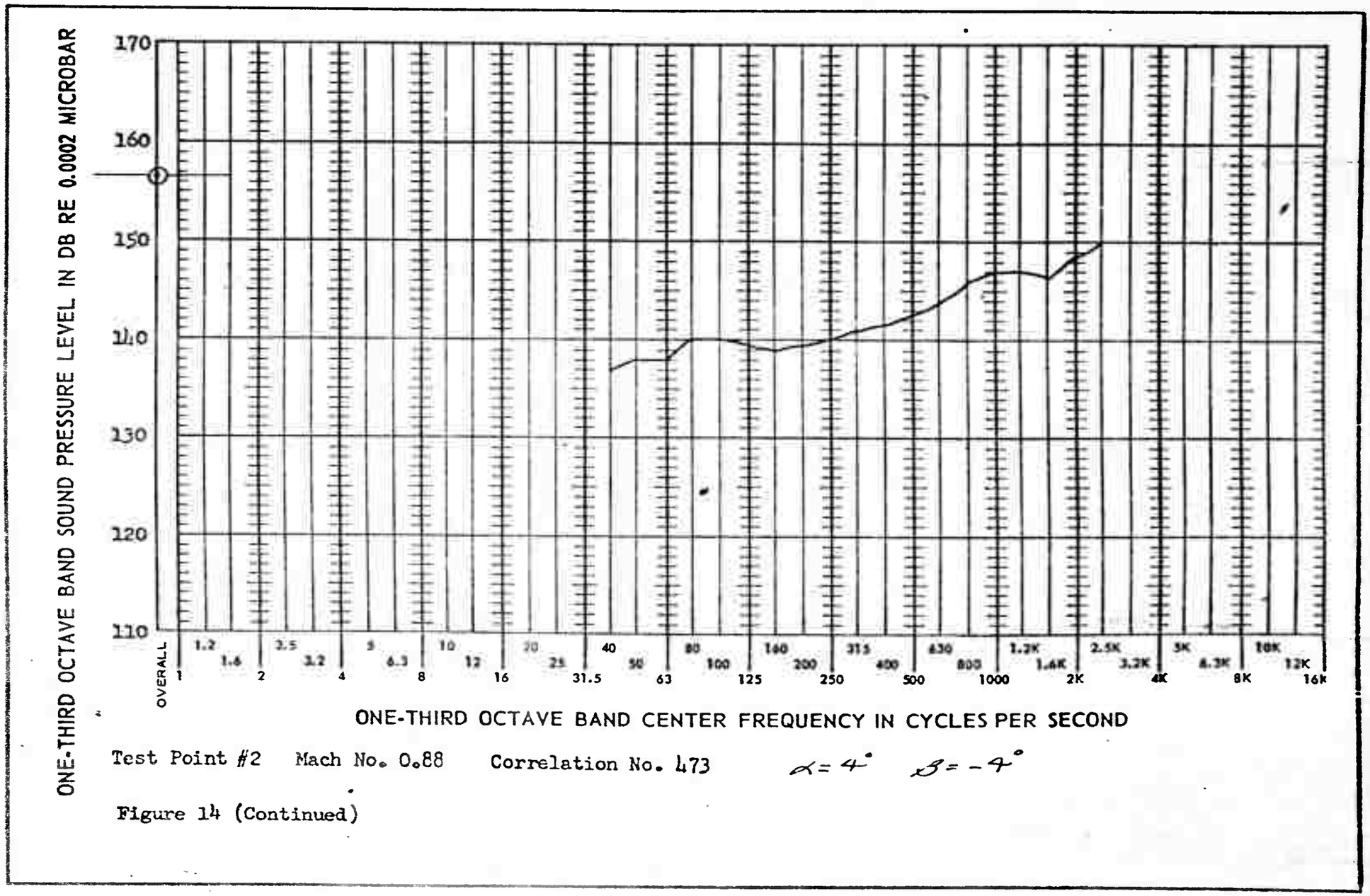
Test Point #2 Mach No. 0.84 Correlation No. 467 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



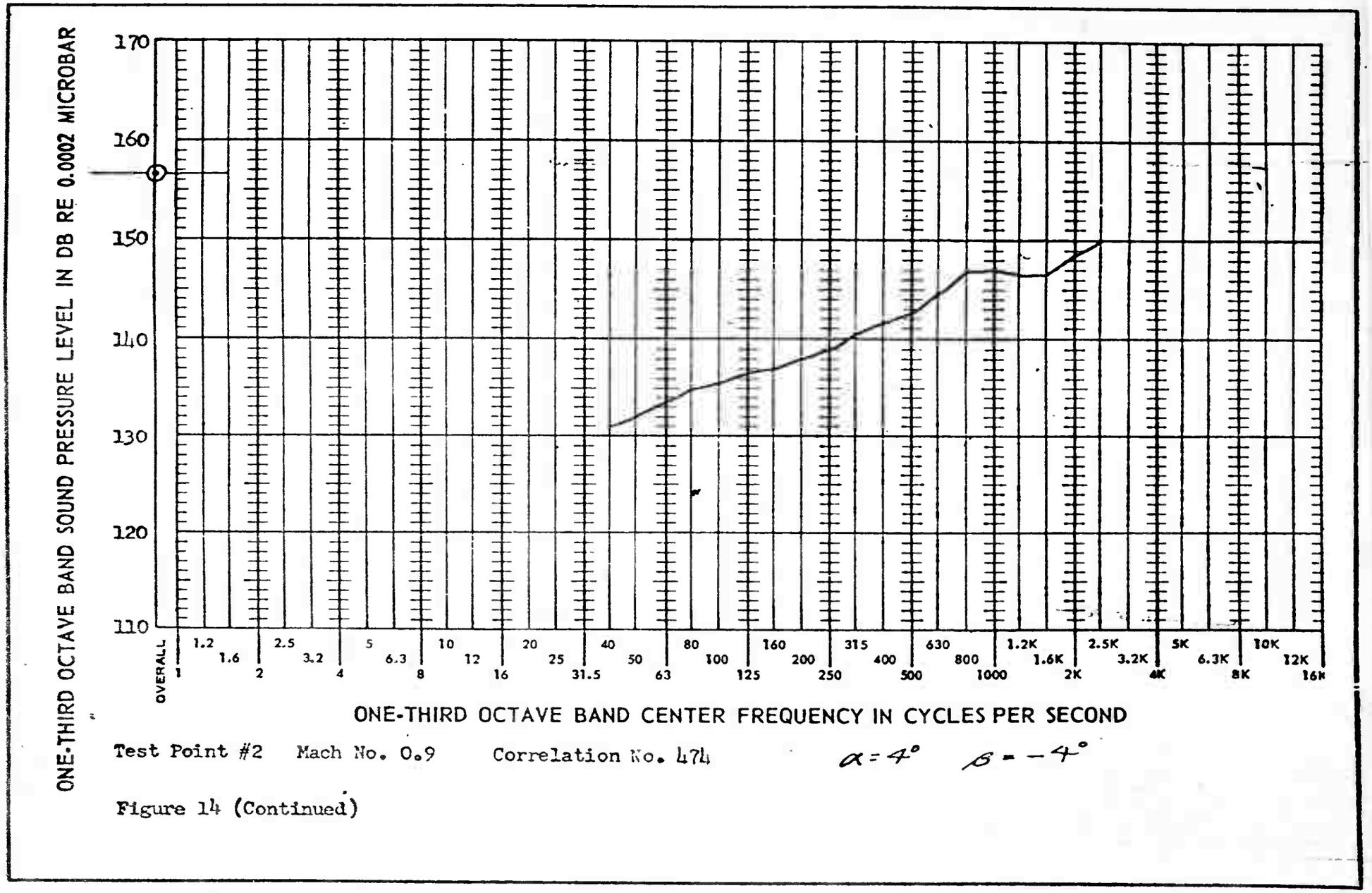
Test Point #2 Mach No. 0.86 Correlation No. 468 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



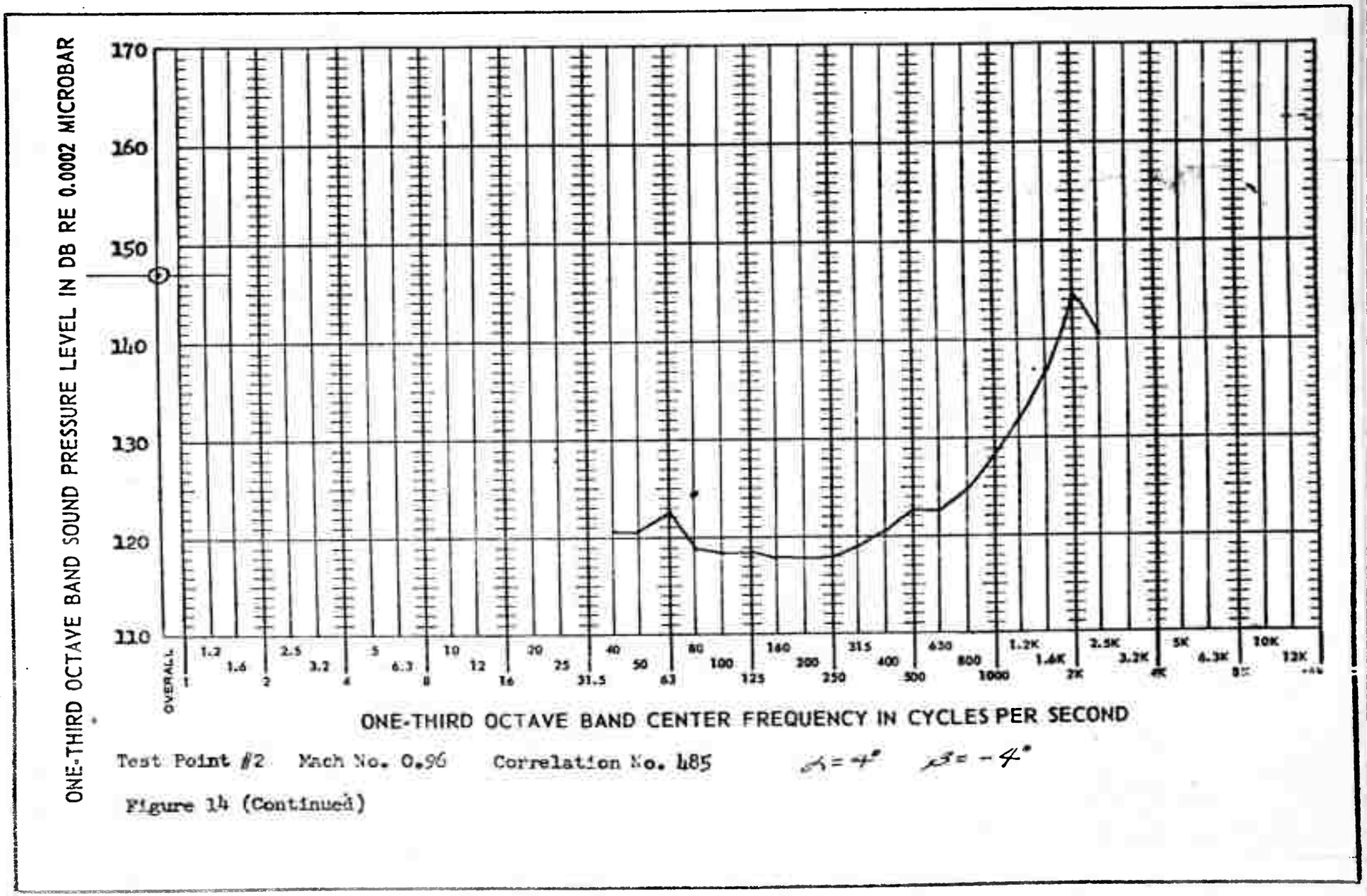
Test Point #2 Mach No. 0.88 Correlation No. 473 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



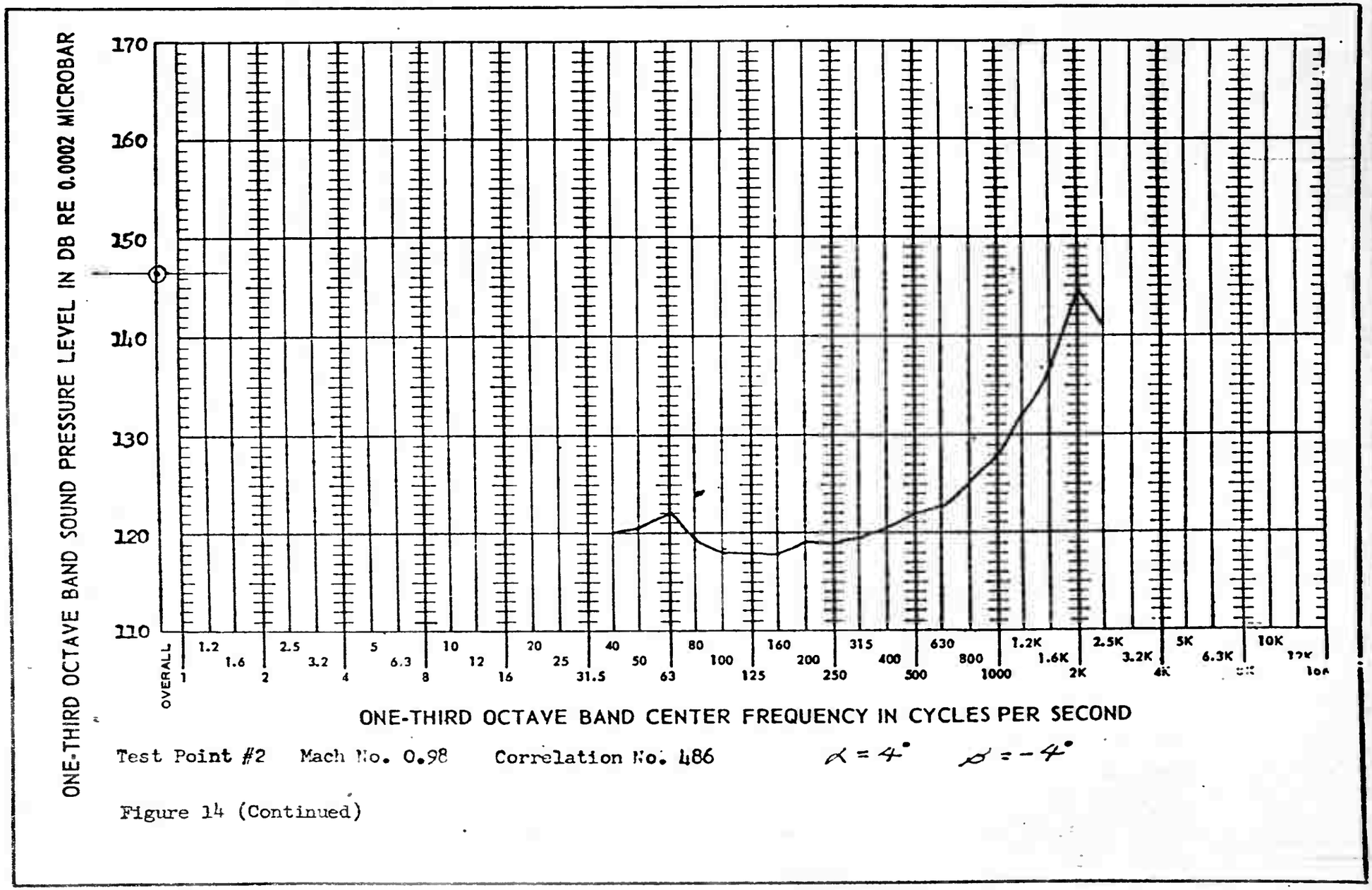
Test Point #2 Mach No. 0.9 Correlation No. 474 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



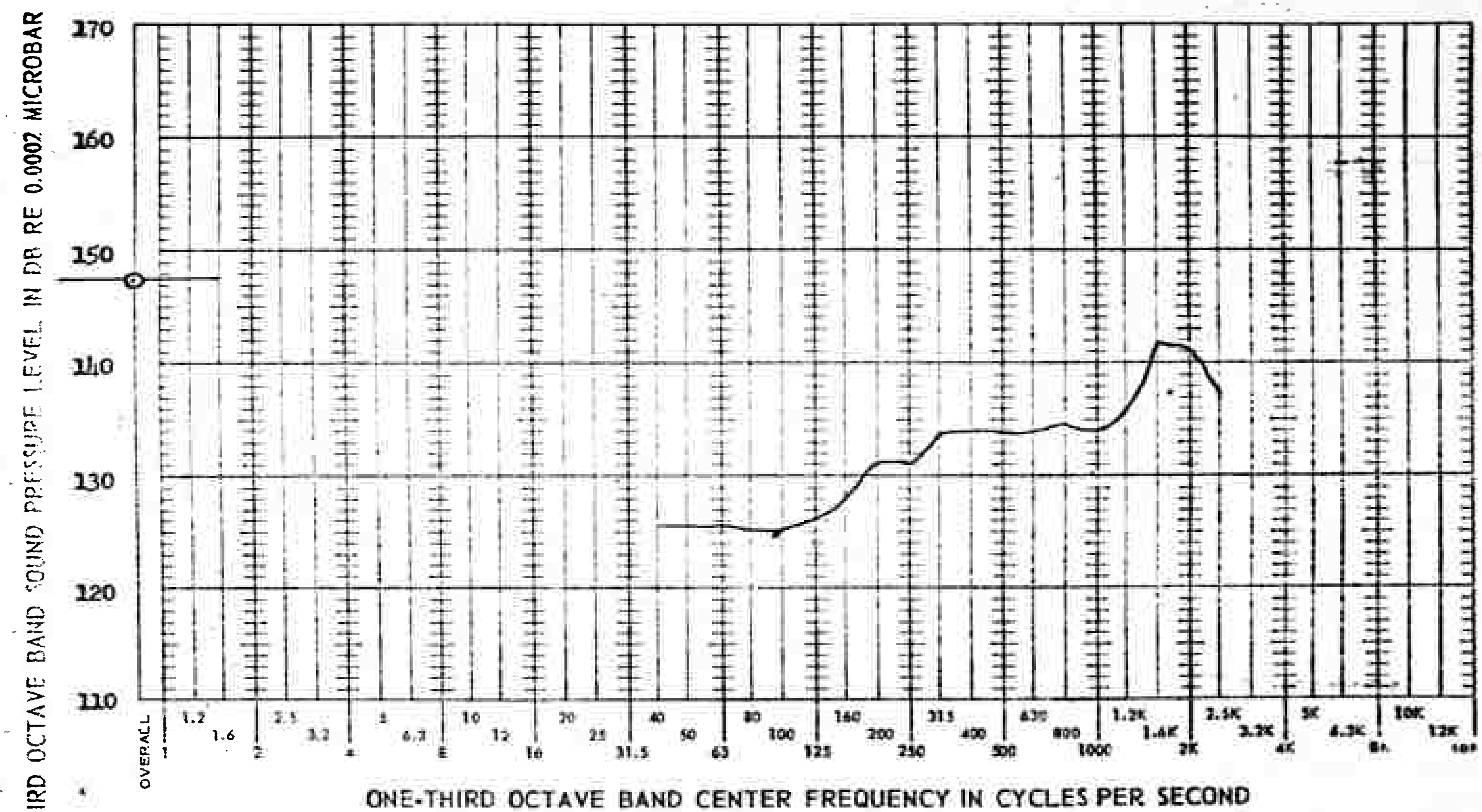
Test Point #2 Mach No. 0.96 Correlation No. 485 $\alpha_1 = 4°$ $\alpha_3 = -4°$

Figure 14 (Continued)



Test Point #2 Mach No. 0.98 Correlation No. 486 $\alpha = 4°$ $\phi = -4°$

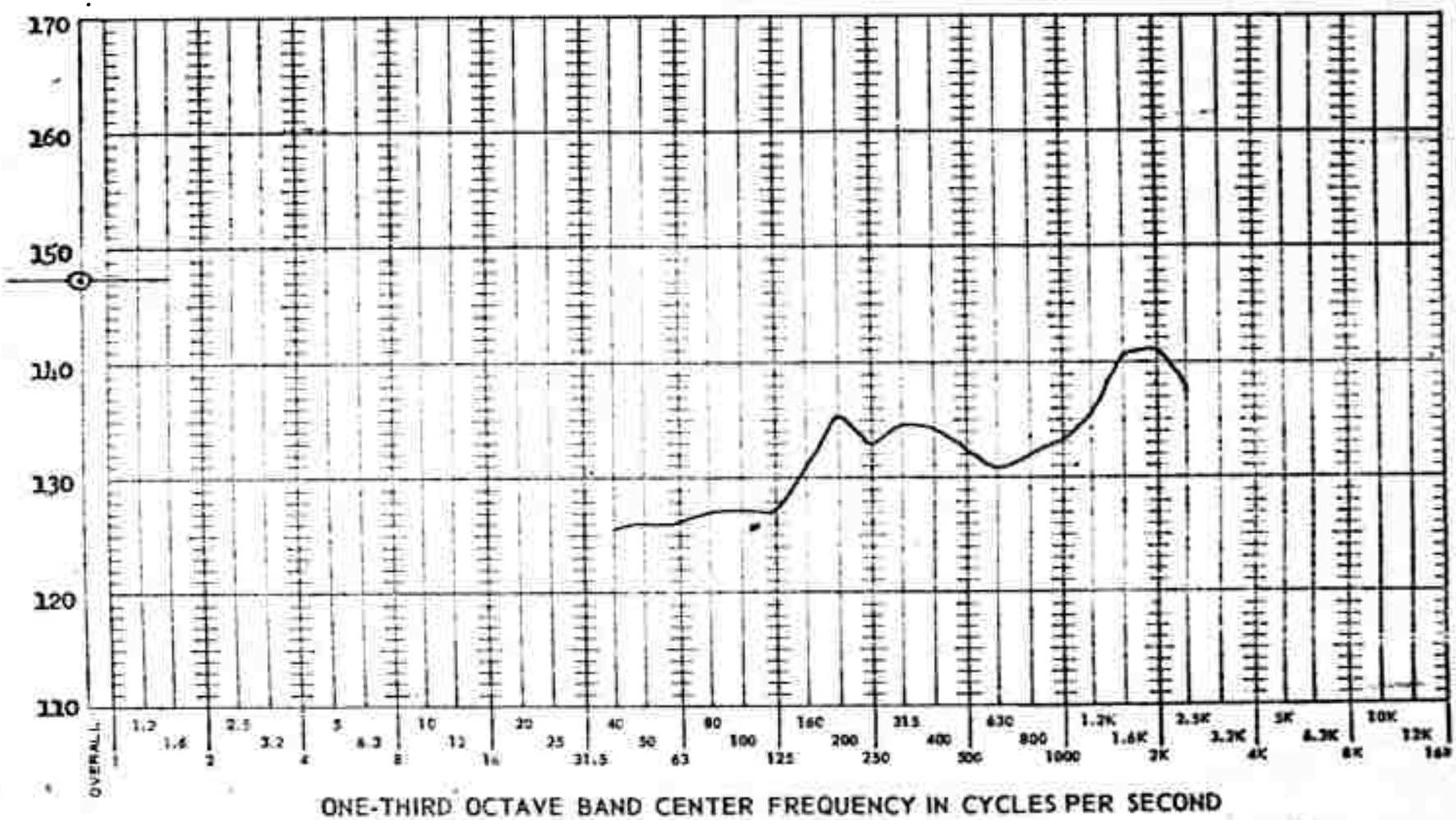
Figure 14 (Continued)



Test Point #1 Mach No. 0.75 Correlation No. 457 $\alpha = -4°$ $\beta = -4°$

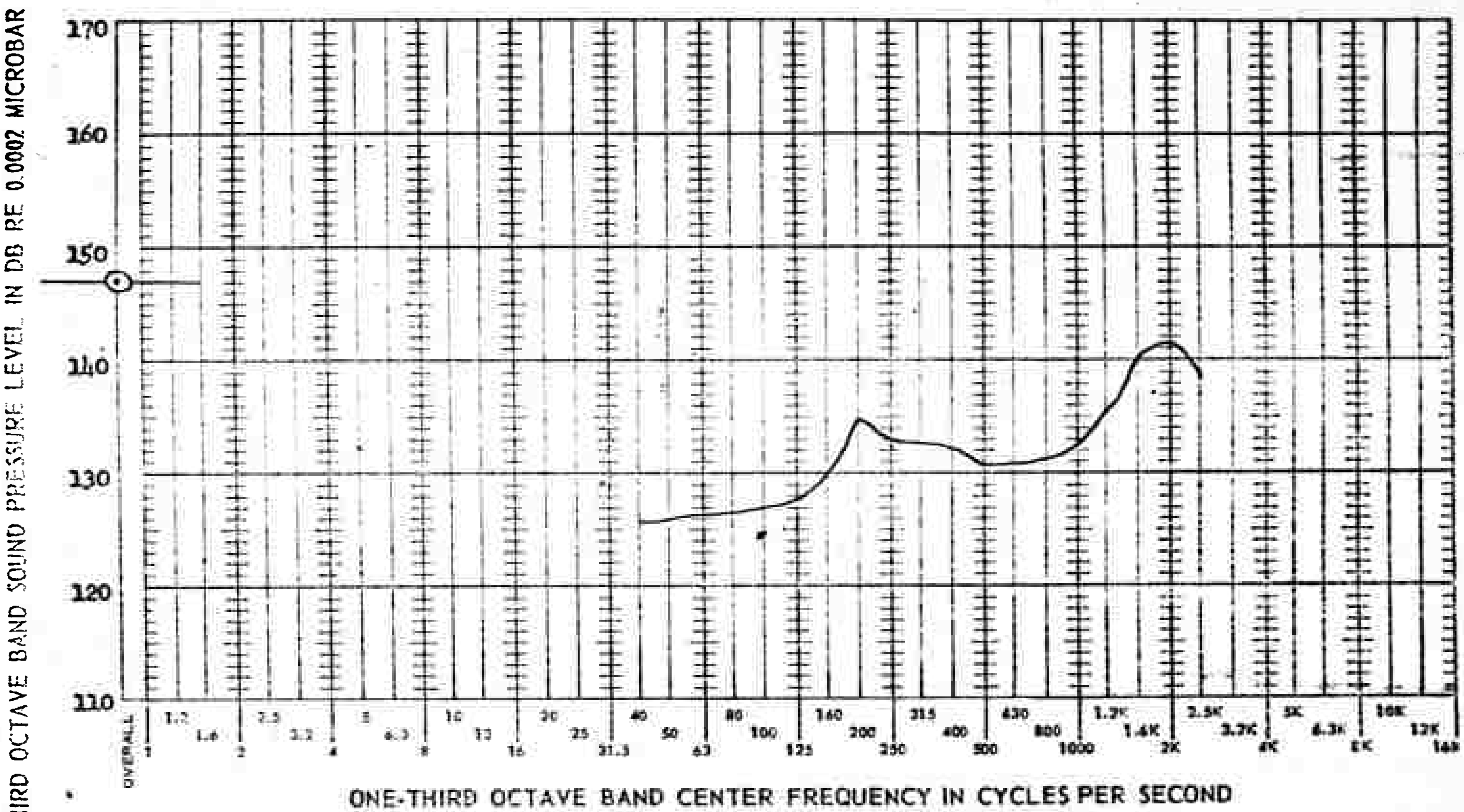
Figure 14 (Continued)

85



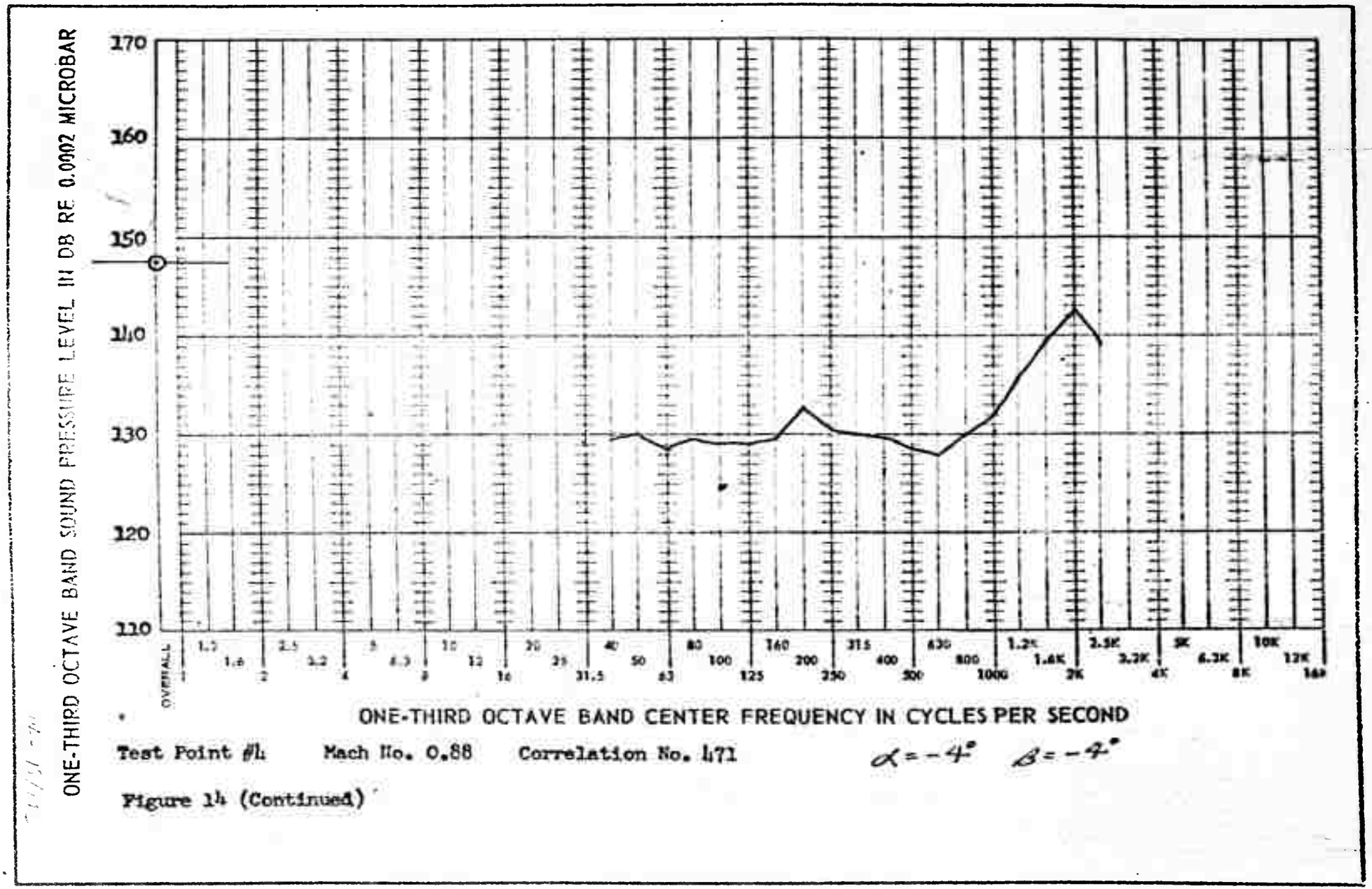
Test Point #4 Mach No. 0.82 Correlation No. 464 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



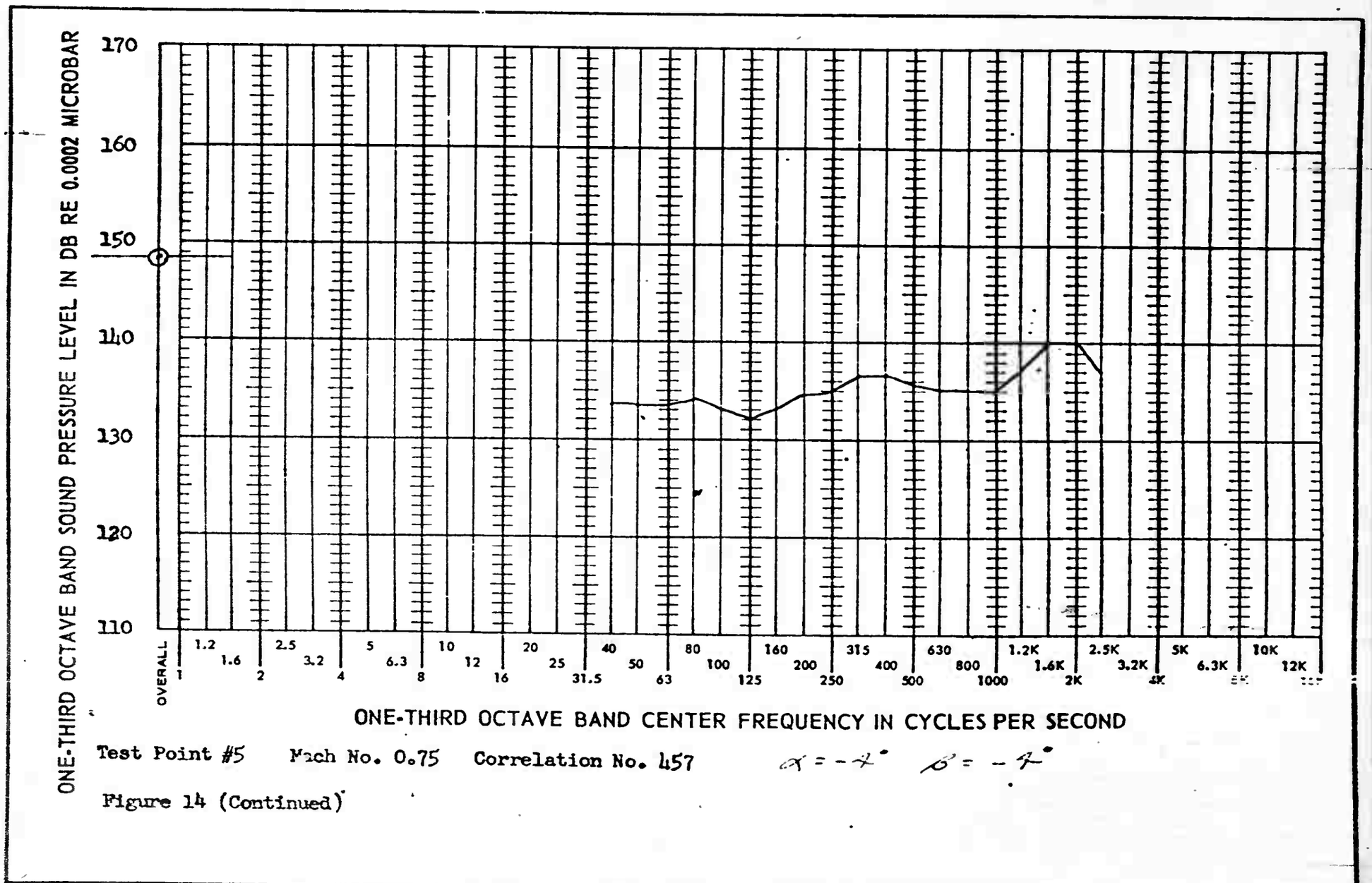
Test Point #4 Mach No. 0.84 Correlation No. 465 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



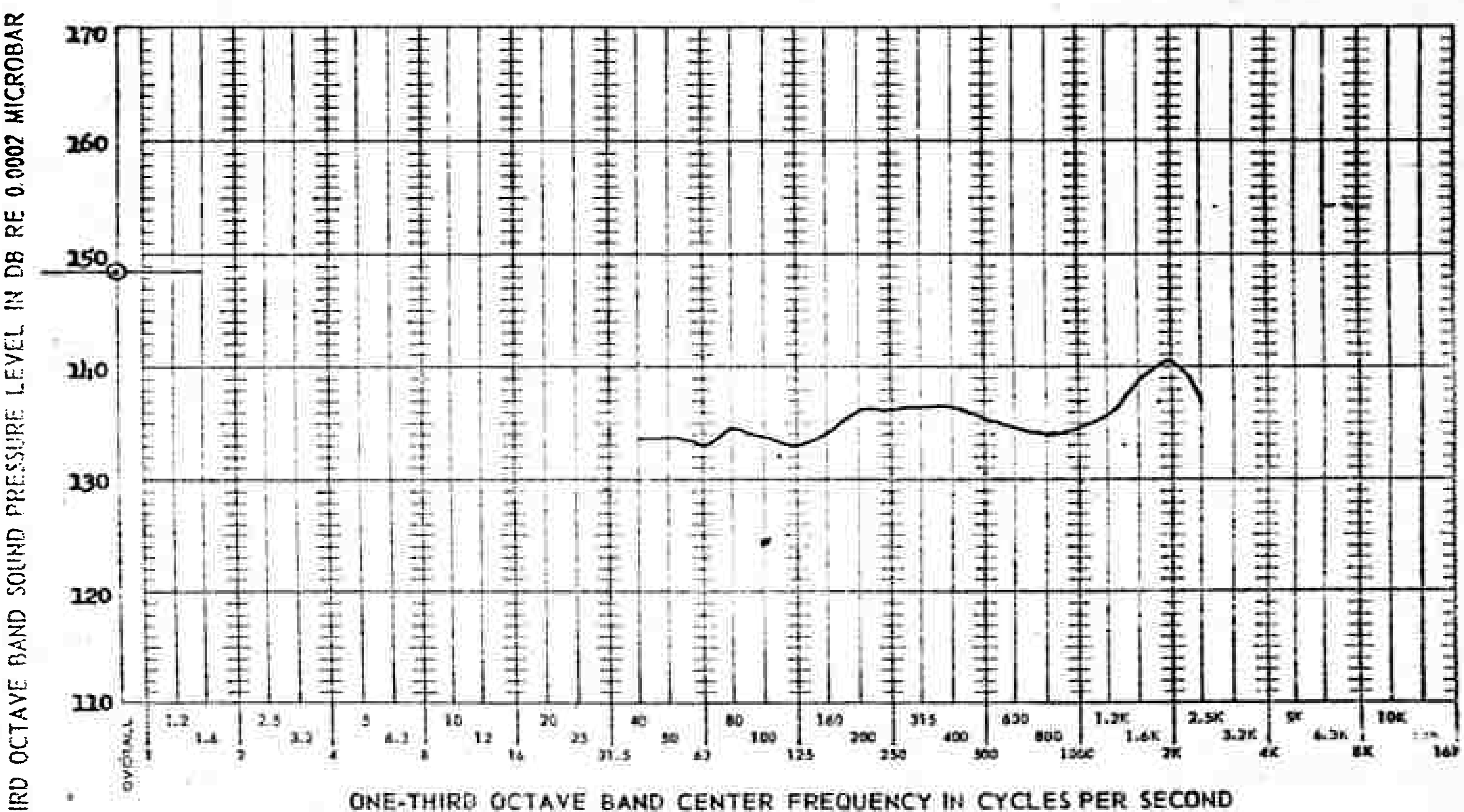
Test Point #4 Mach No. 0.88 Correlation No. 471 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



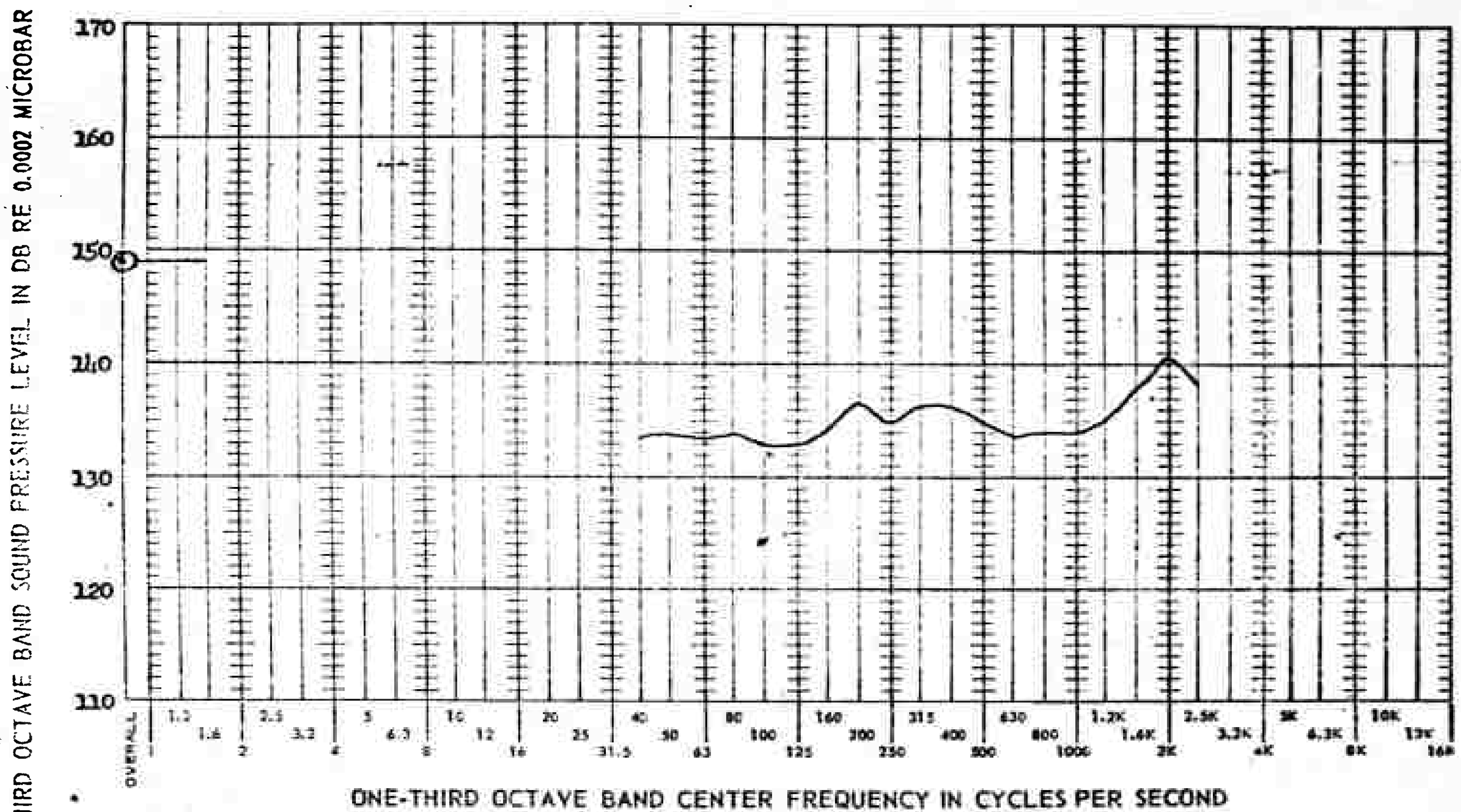
Test Point #5 Mach No. 0.75 Correlation No. 457 $\alpha = -2^\circ$ $\beta = -2^\circ$

Figure 14 (Continued)



Test Point #5 Mach No. 0.8 Correlation No. 458 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



Test Point #5 Mach No. 0.82 Correlation No. 464 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)

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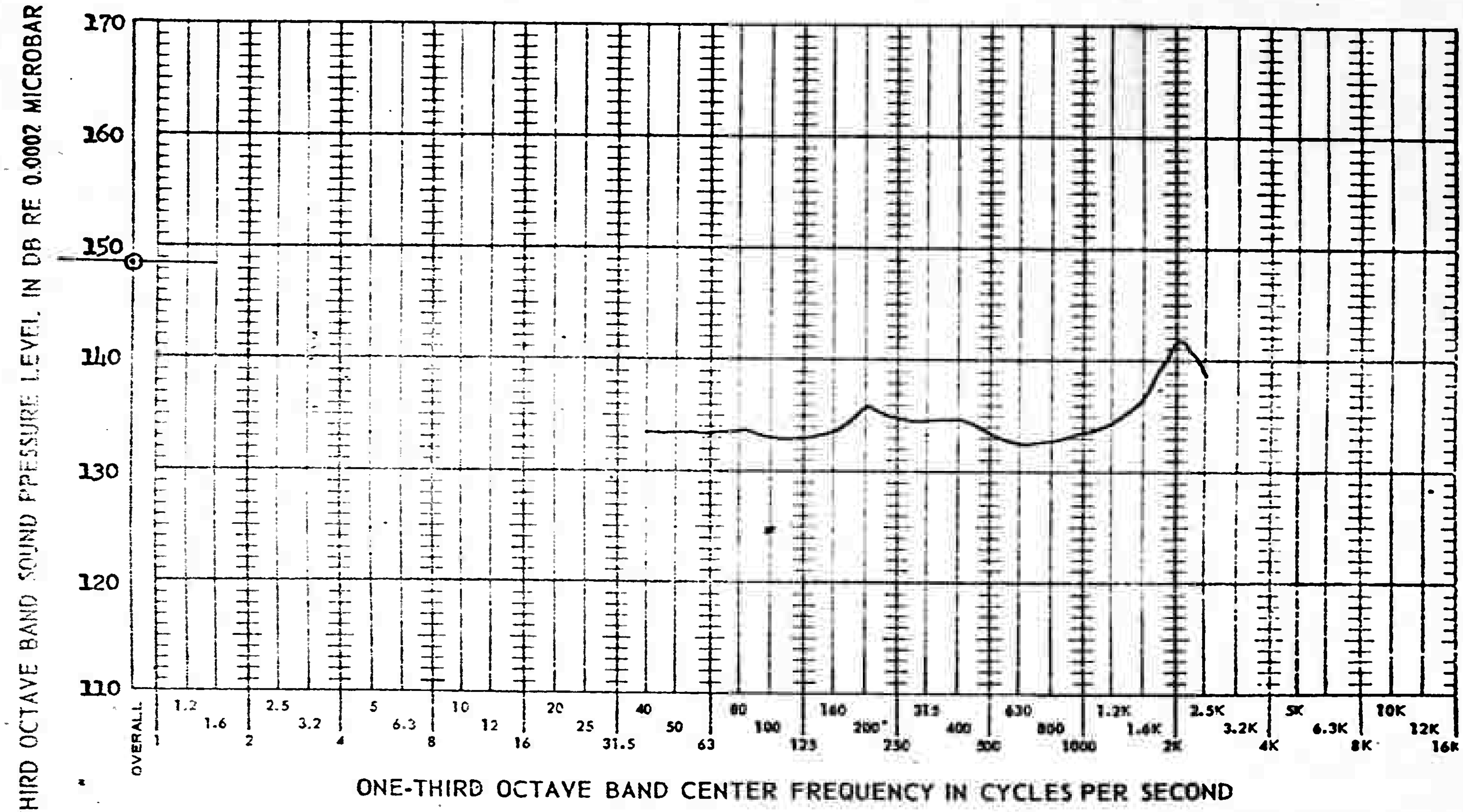
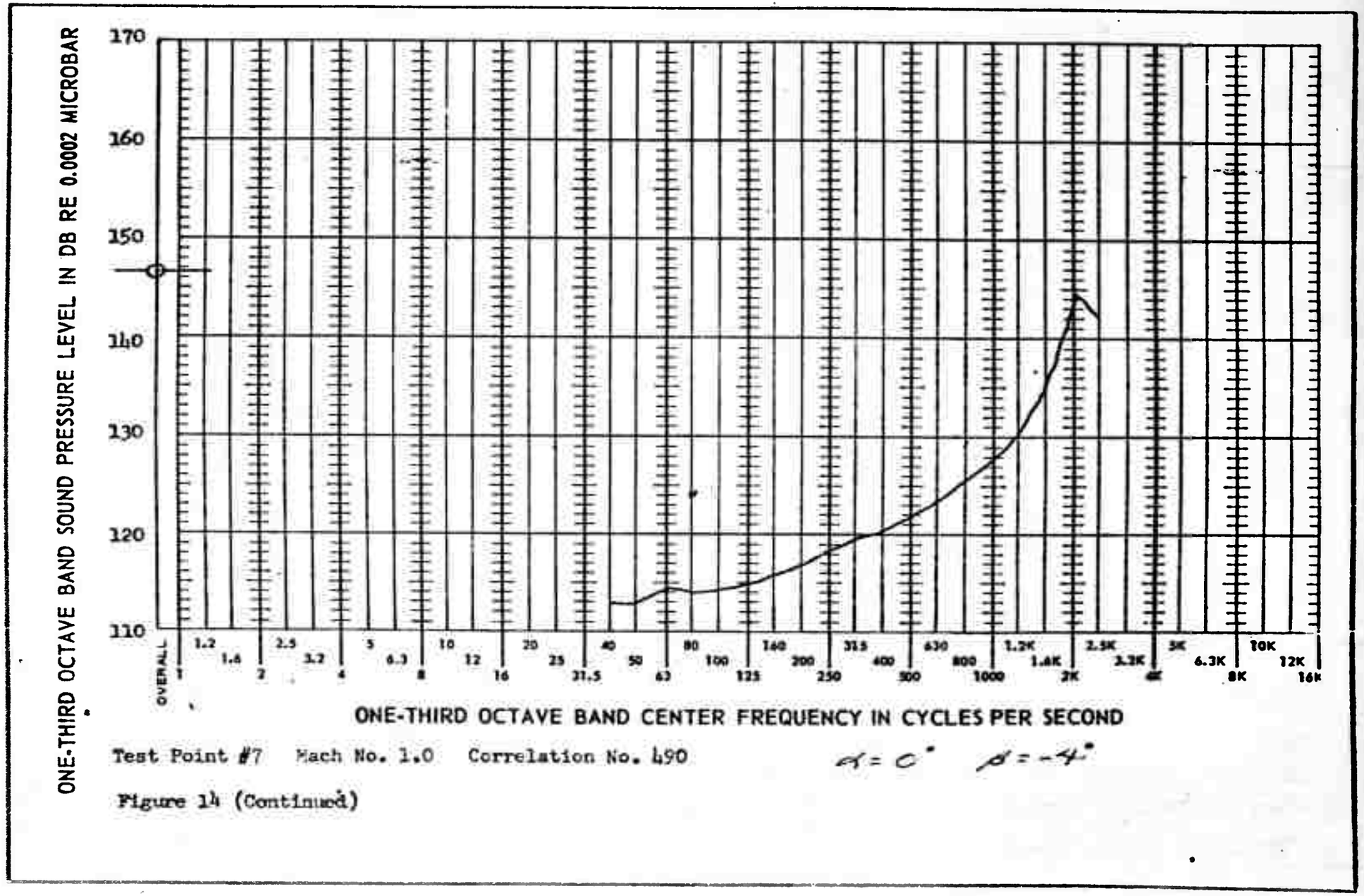


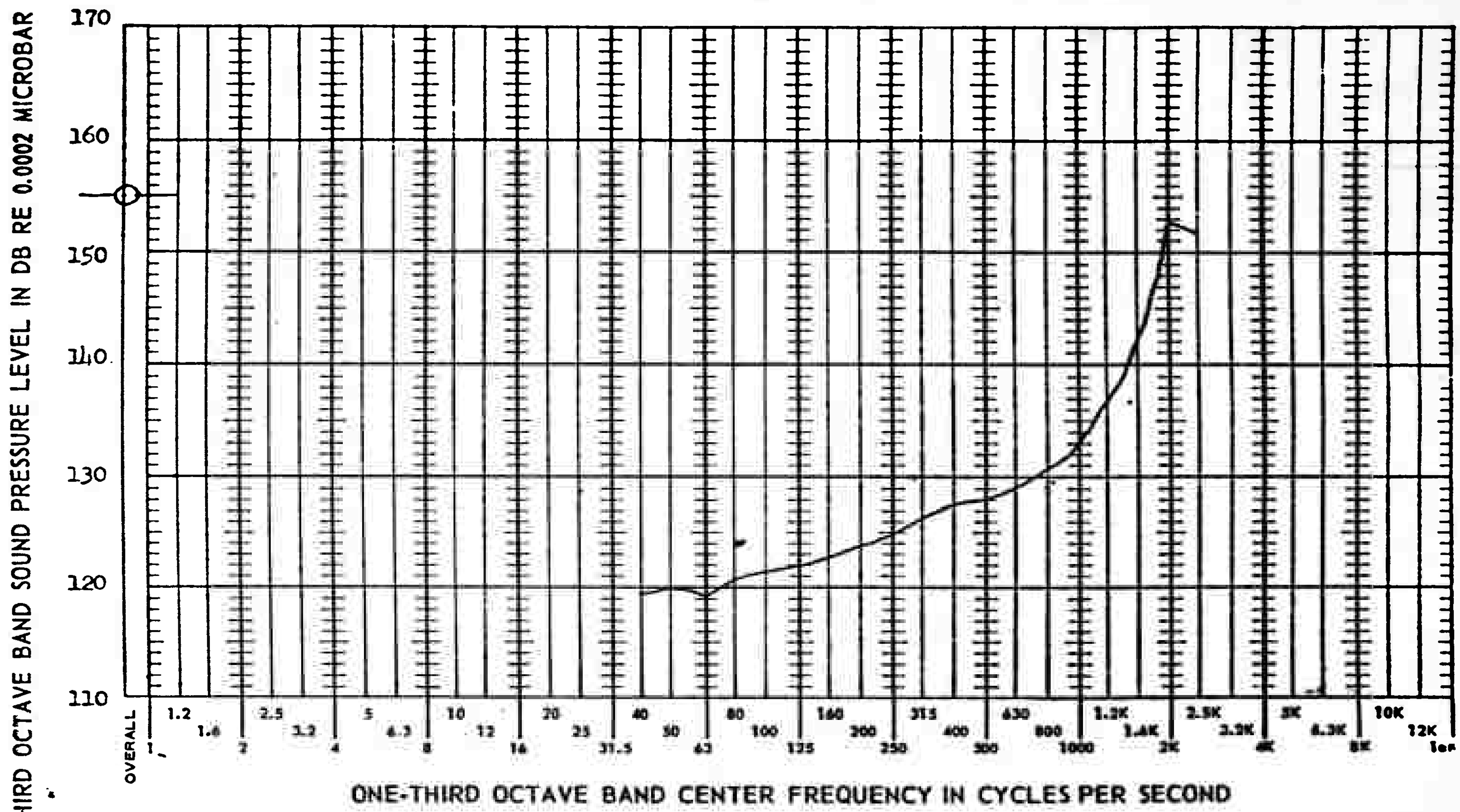
Test Point #5 Mach No. 0.84 Correlation No. 465 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



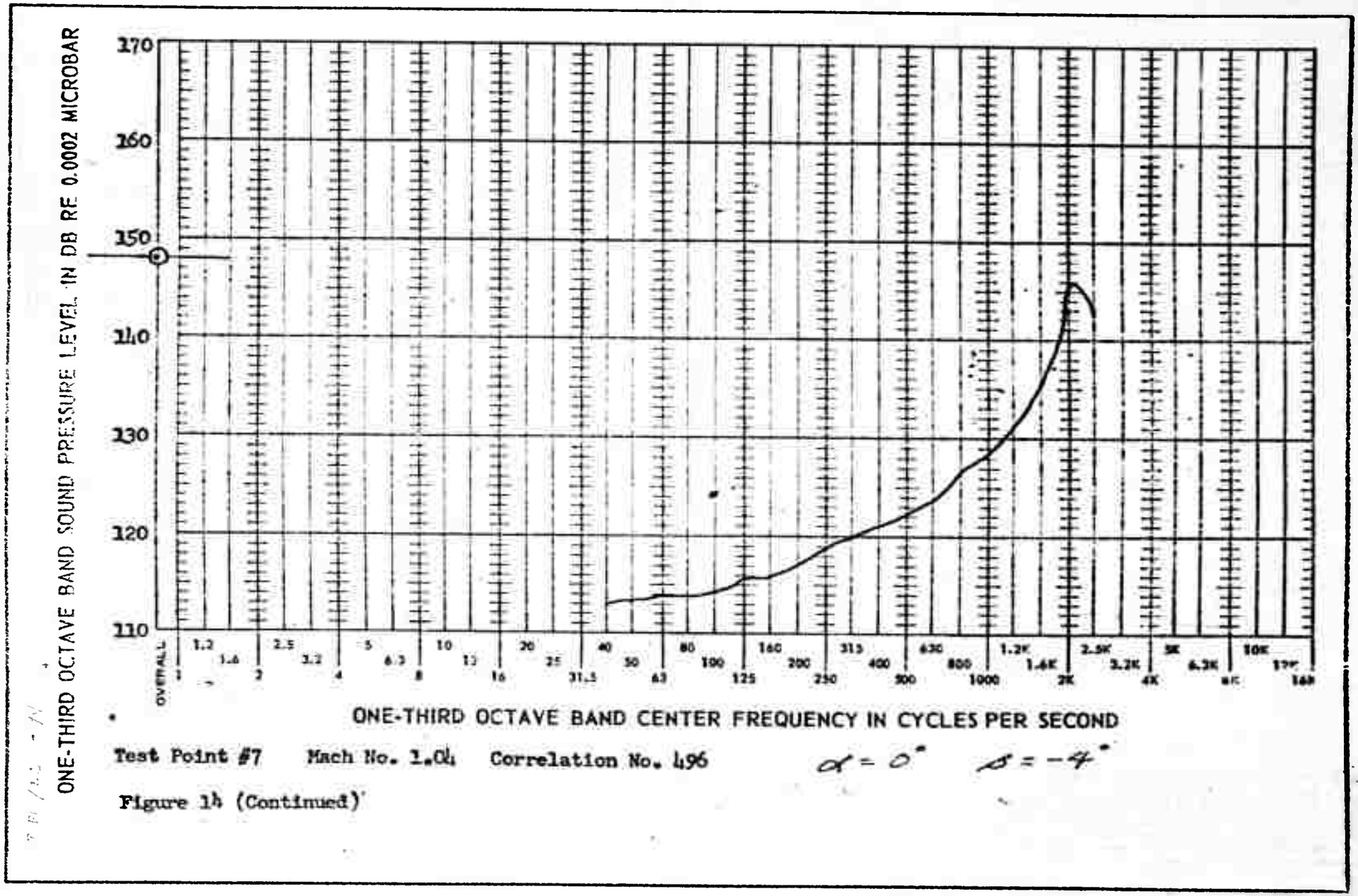
Test Point #7 Mach No. 1.0 Correlation No. 490 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



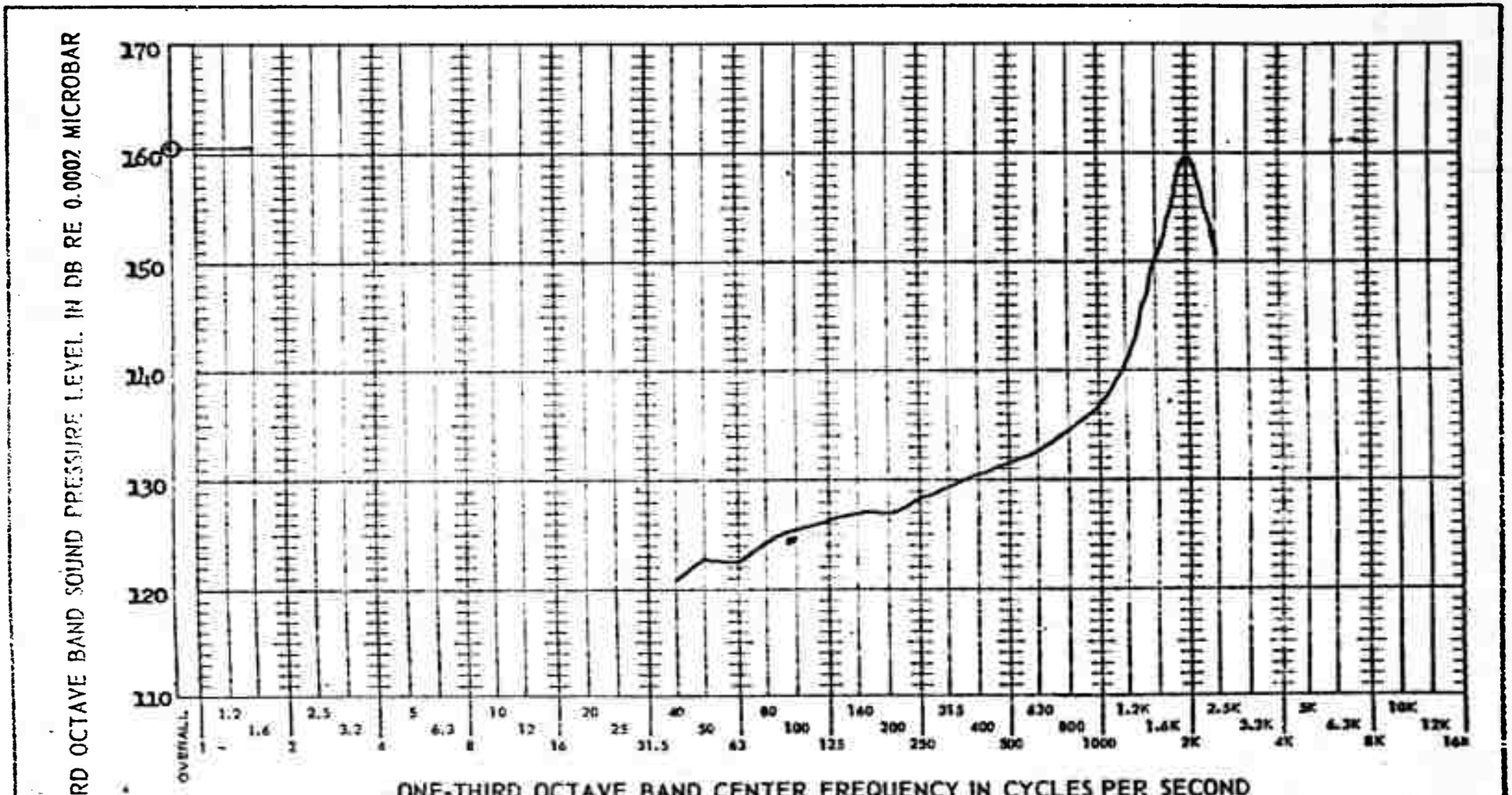
Test Point #7 Mach No. 1.04 Correlation No. 495 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



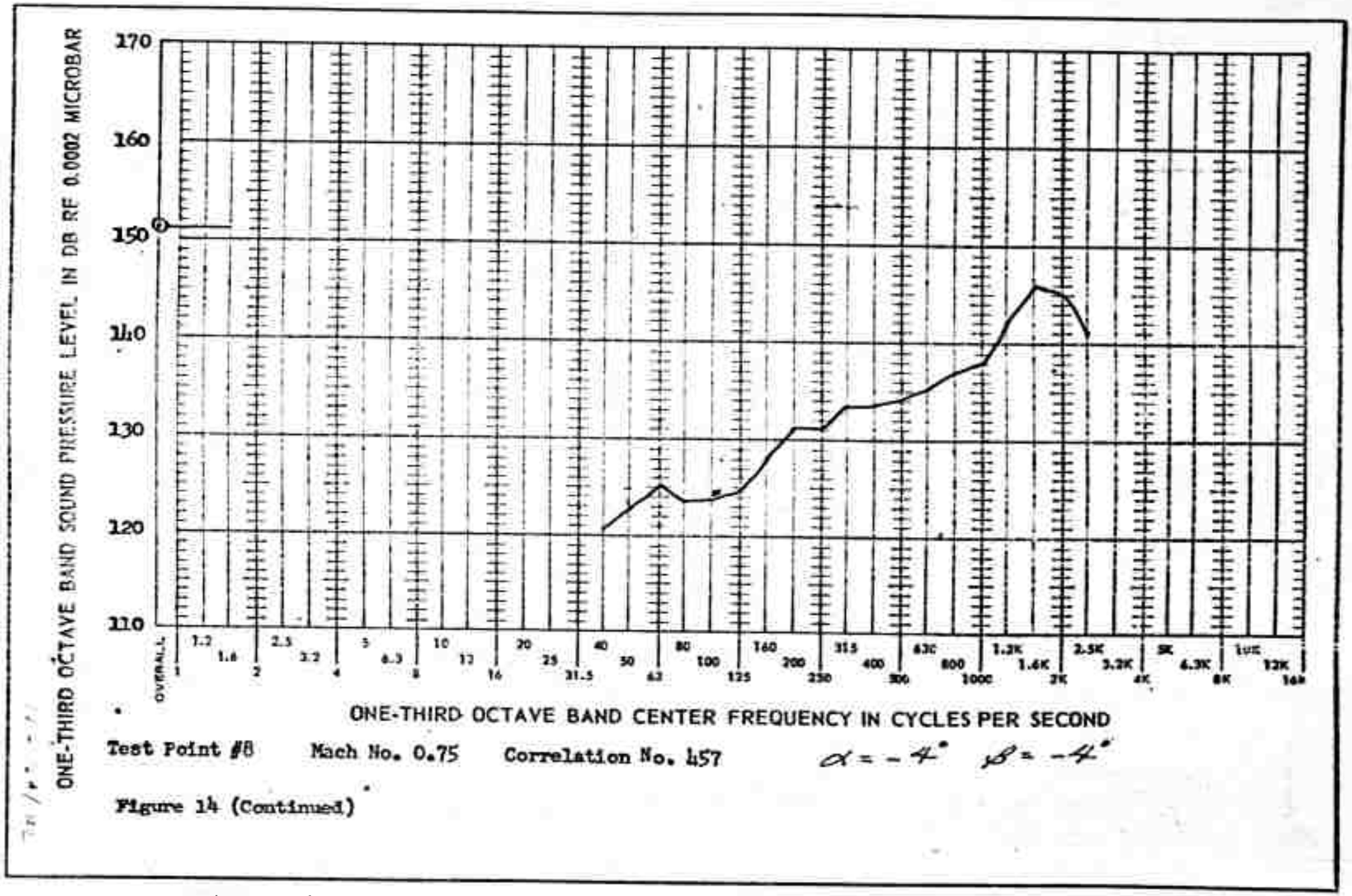
Test Point #7 Mach No. 1.04 Correlation No. 496 $\alpha = 0°$ $\delta = -4°$

Figure 14 (Continued)



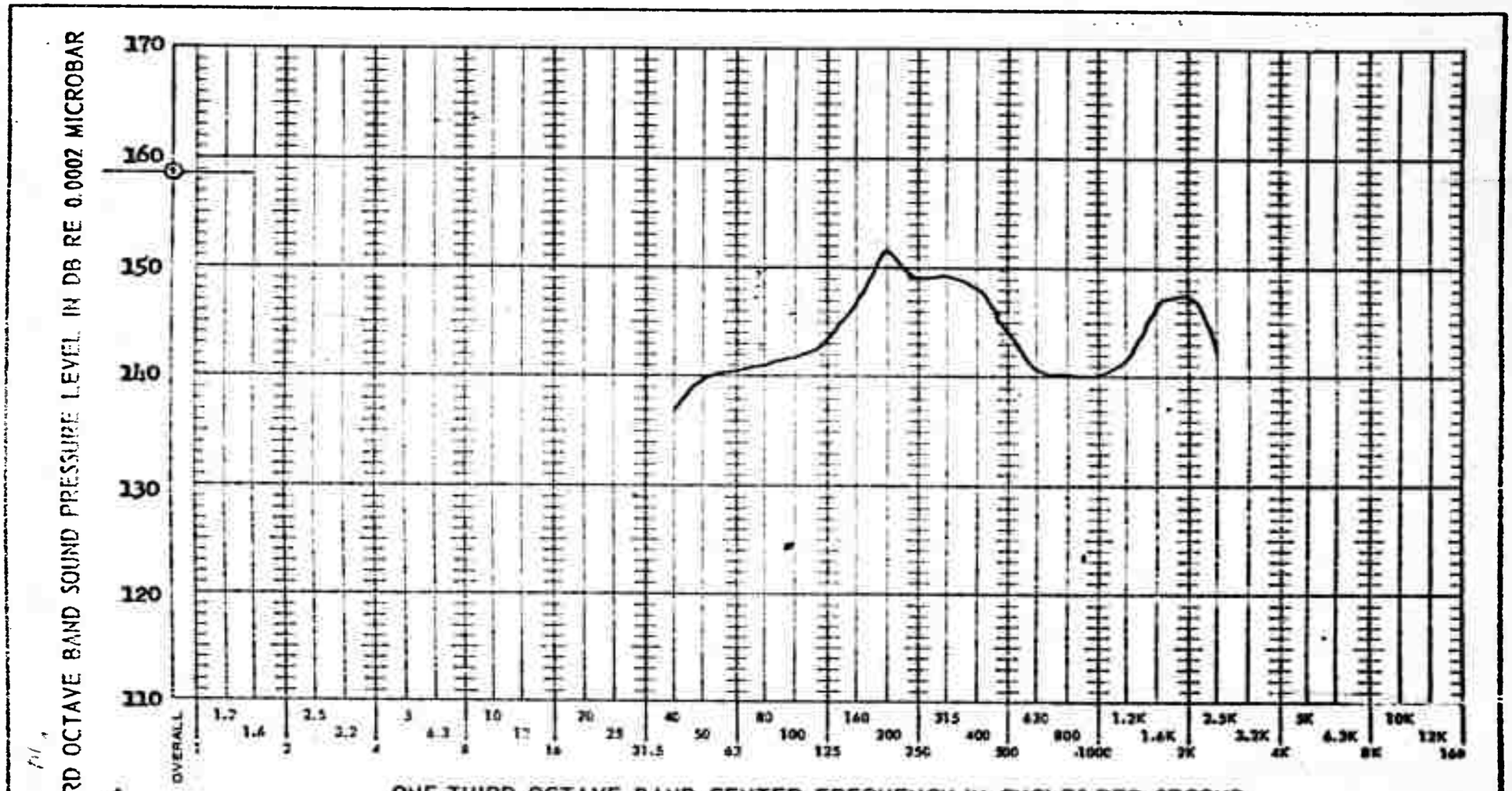
Test Point #7 Mach No. 1.08 Correlation No. 501 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



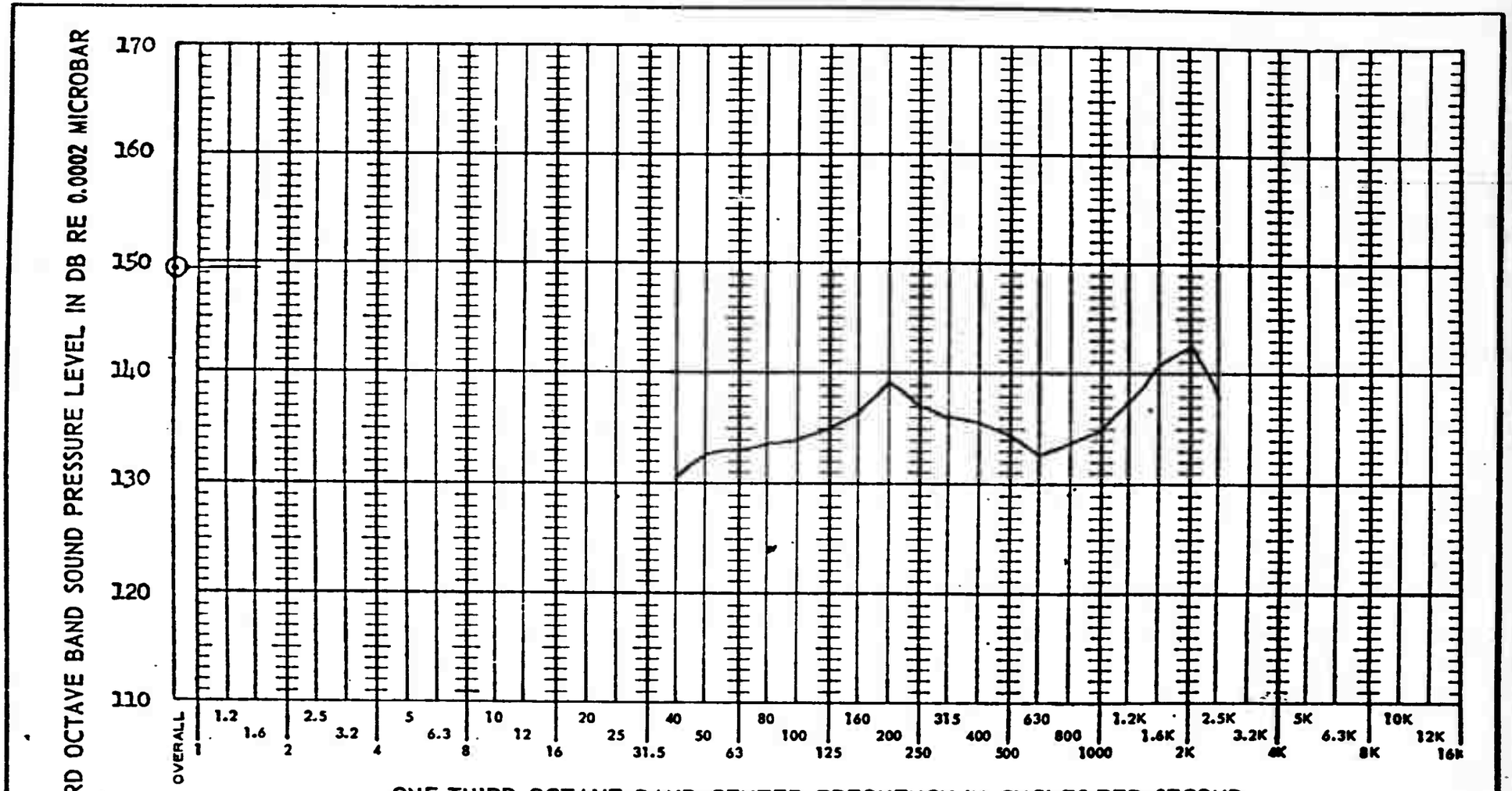
Test Point #8 Mach No. 0.75 Correlation No. 457 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



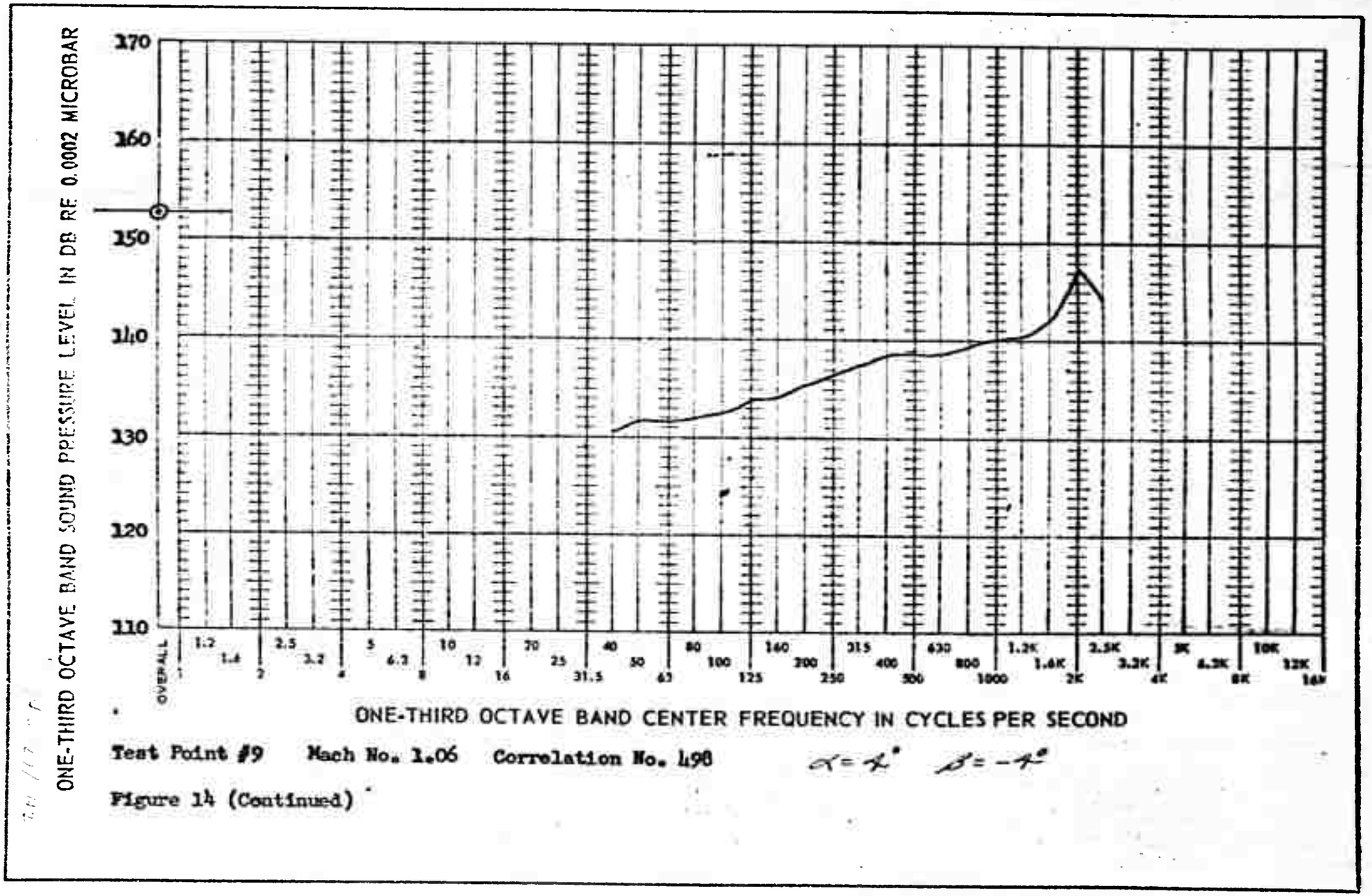
Test Point #8 Mach No. 0.84 Correlation No. 465 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



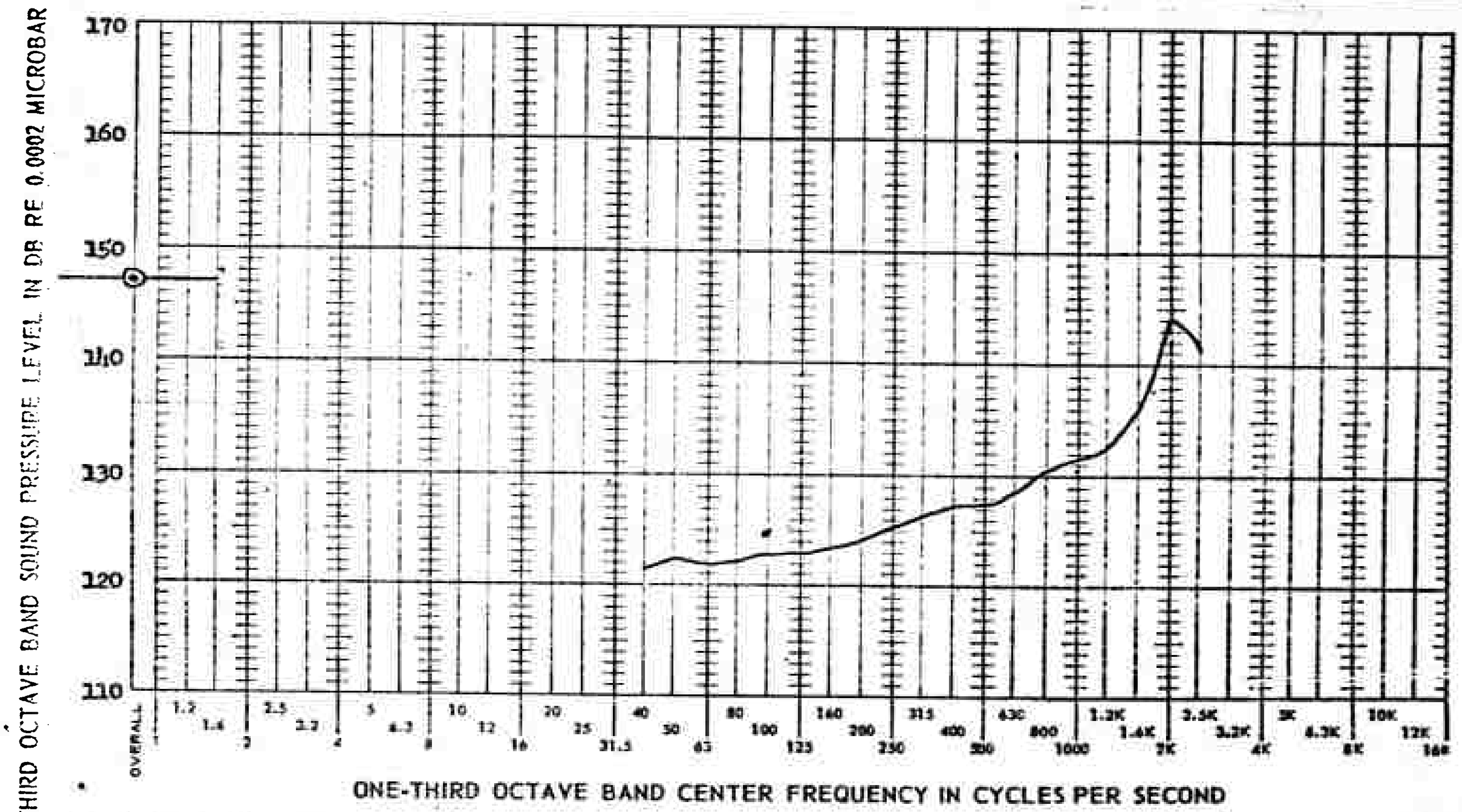
Test Point #8 Mach No. 0.88 Correlation No. 471 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



Test Point #9 Mach No. 1.06 Correlation No. 498 $\alpha = 4^\circ$ $\beta = -4^\circ$

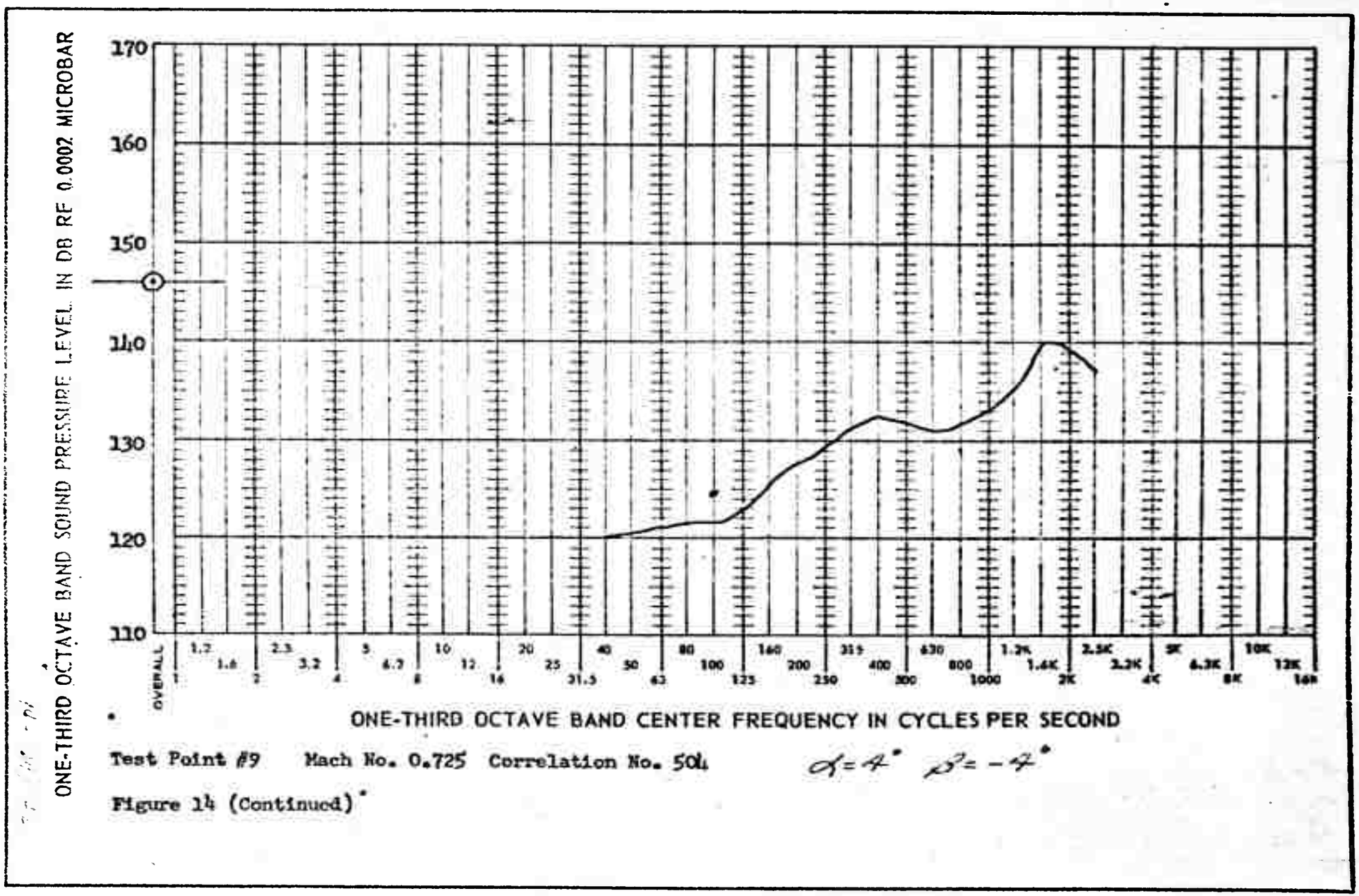
Figure 14 (Continued)



Test Point #9 Mach No 1.06 Correlation No. 499 $\alpha = 0°$ $\beta = -4°$

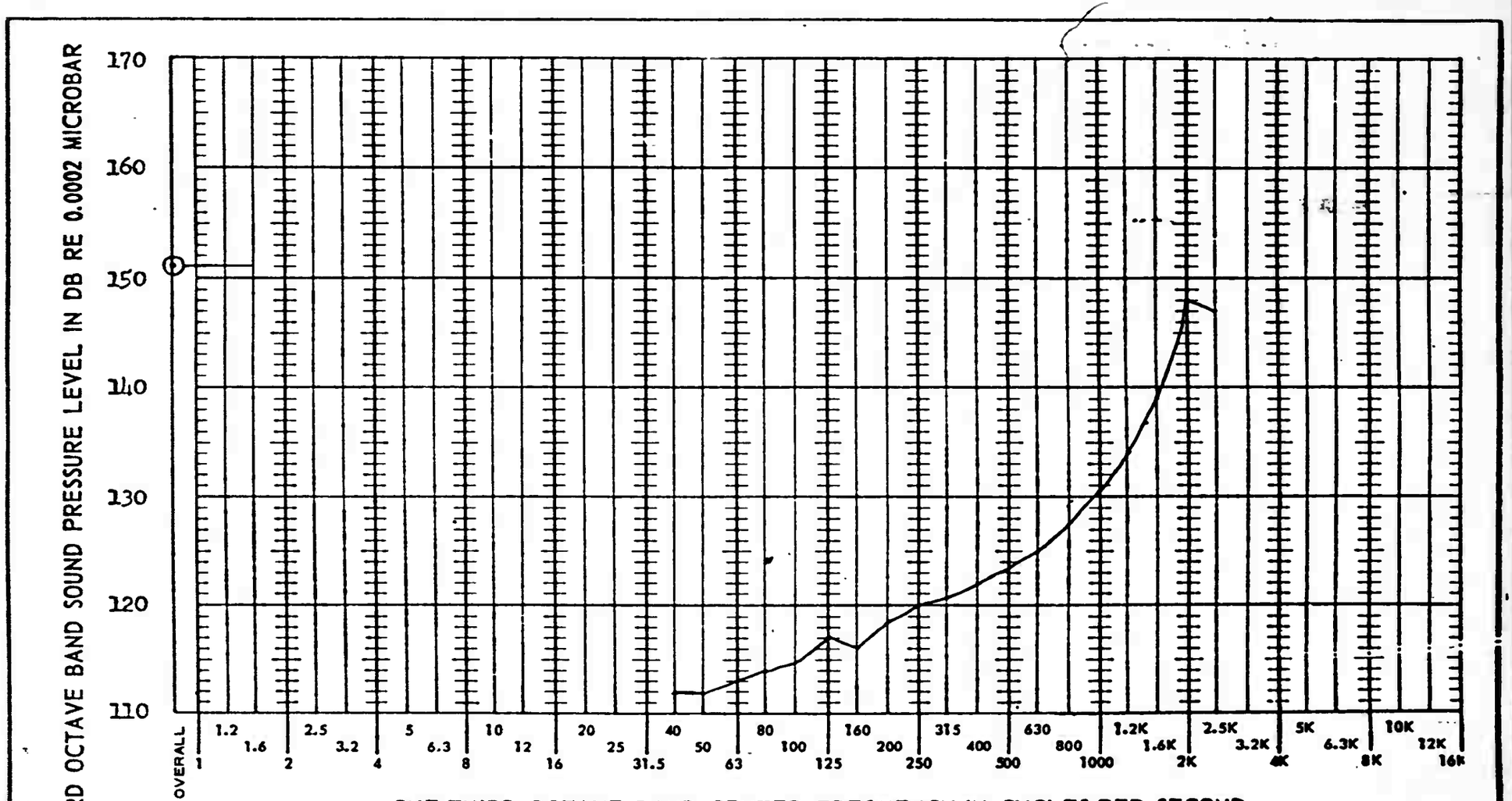
Figure 14 (Continued)

101



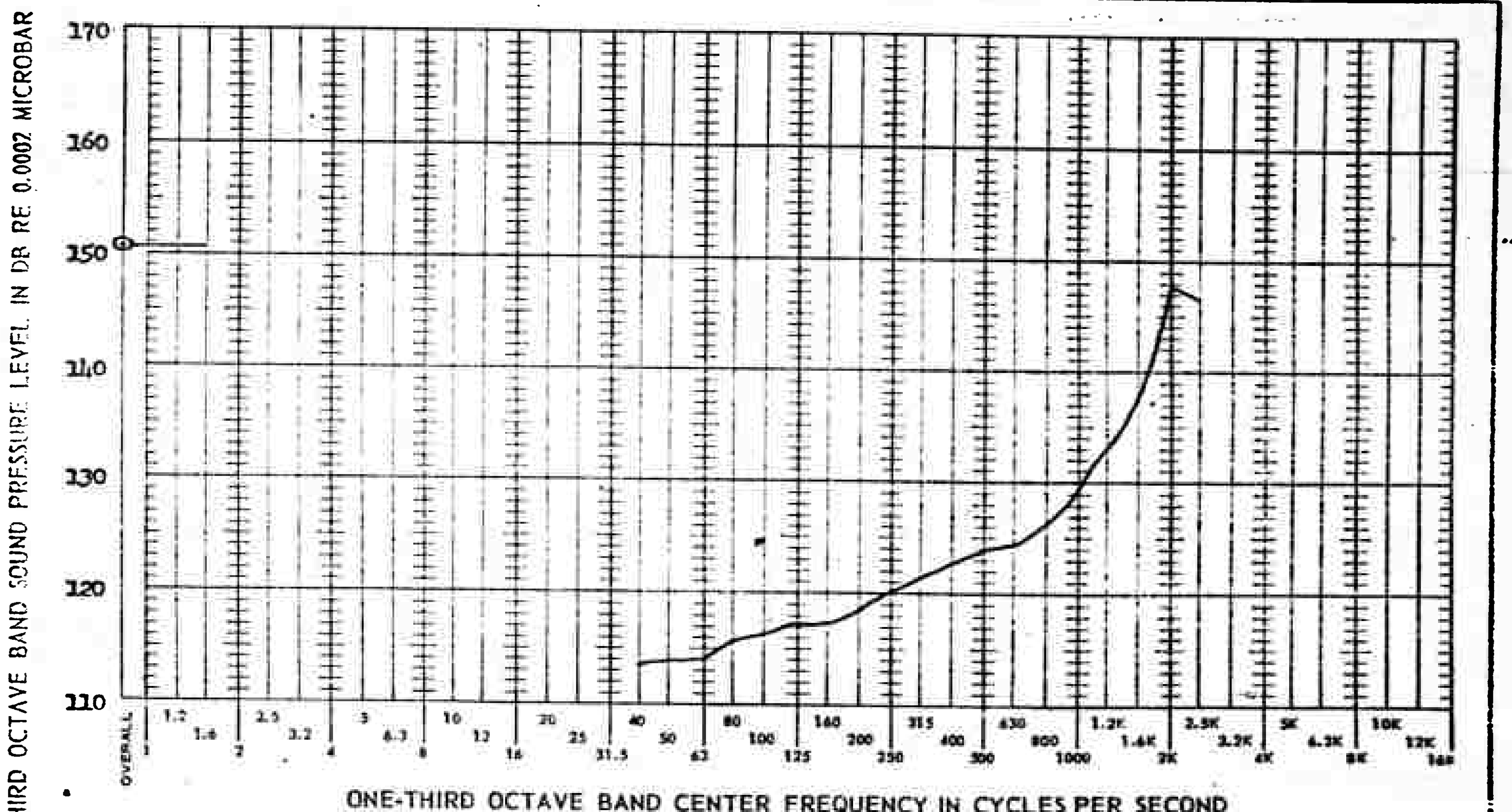
Test Point #9 Mach No. 0.725 Correlation No. 504 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



Test Point #12 Mach No. 1.0 Correlation No. 489 $\alpha = -4°$ $\beta = -4°$

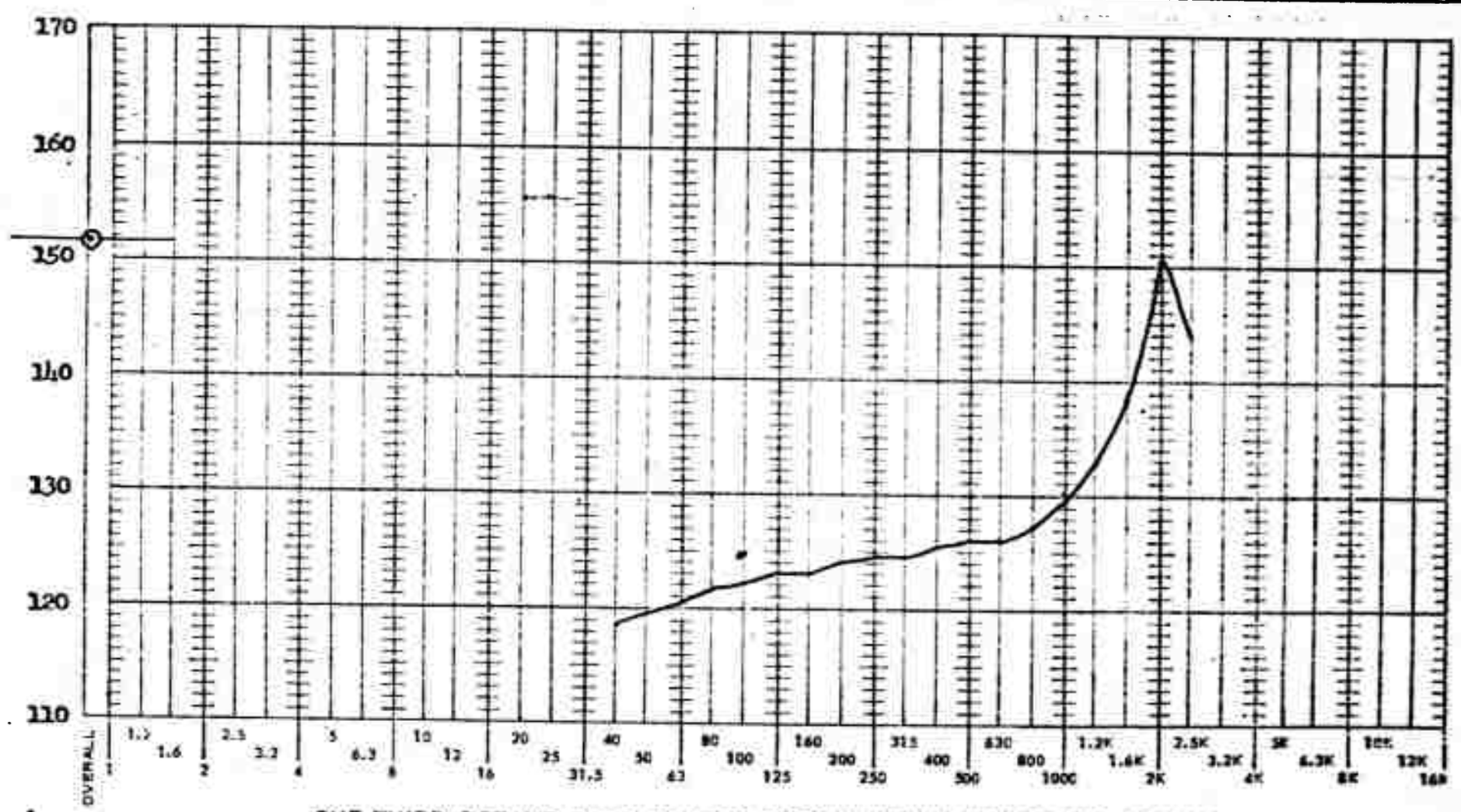
Figure 14 (Continued)



Test Point #12 Mach No. 1.04 Correlation No. 495 $\alpha = -4^\circ$ $\beta = -4^\circ$

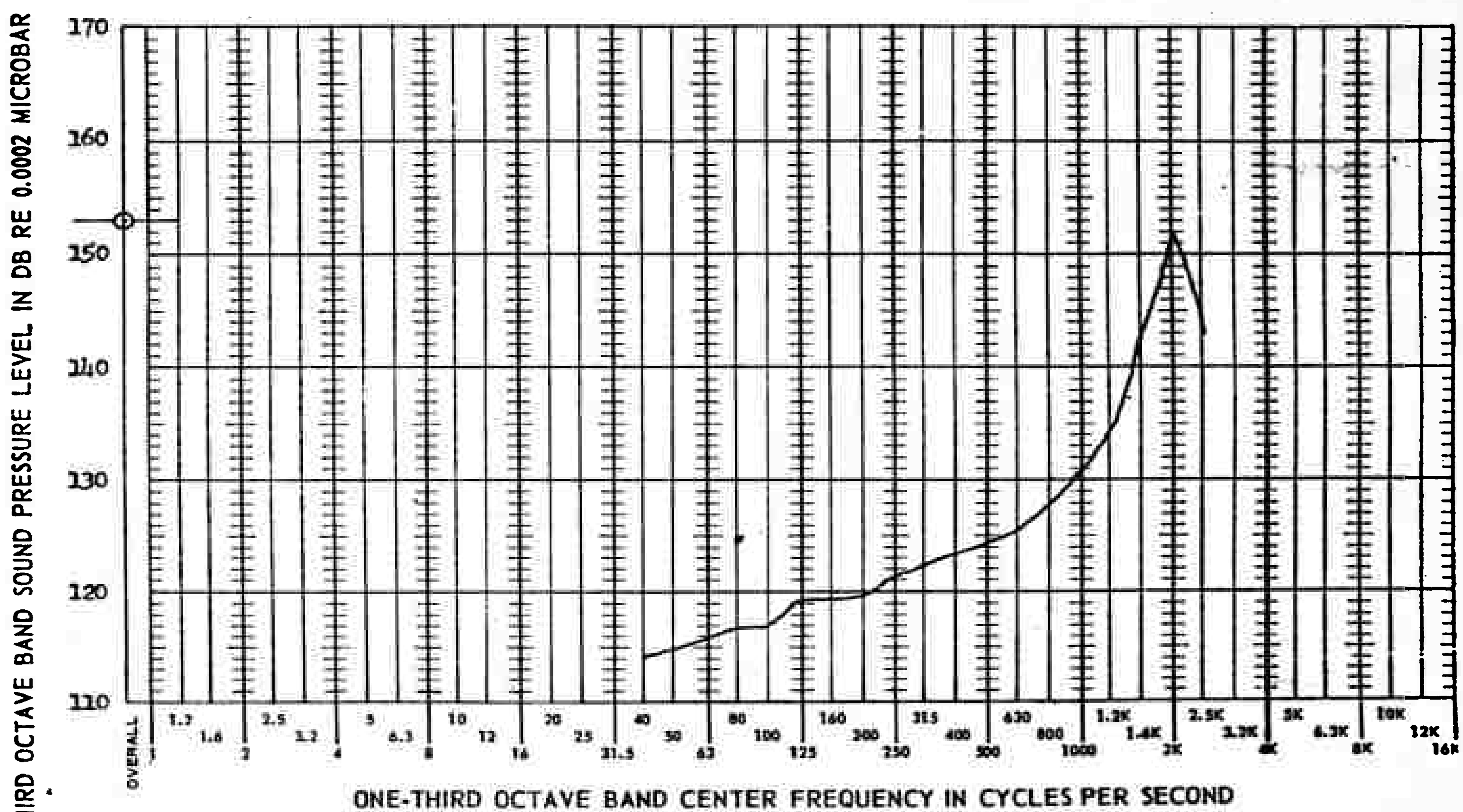
Figure 14 (Continued)

104



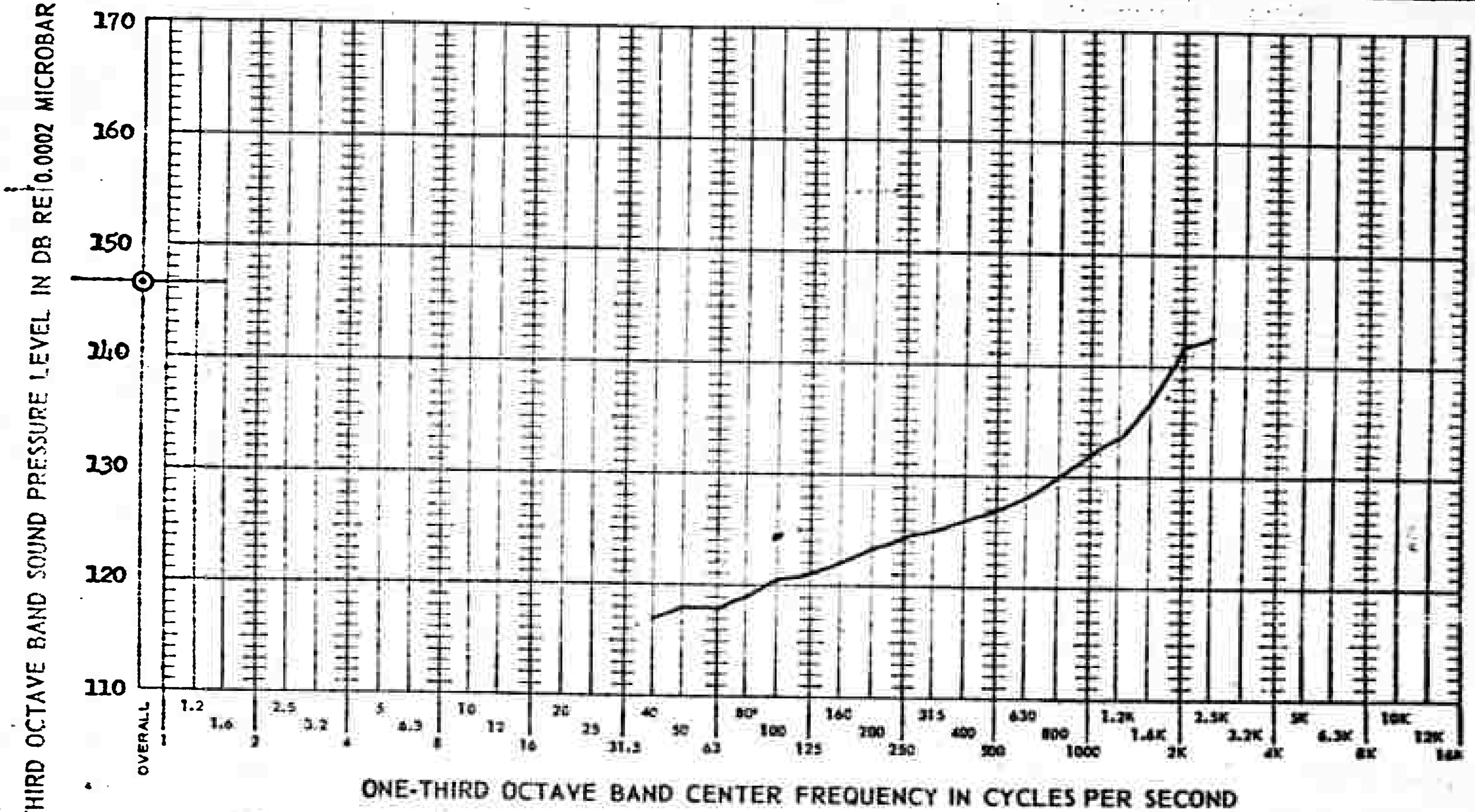
Test Point #12 Mach No. 1.06 Correlation No. 500 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



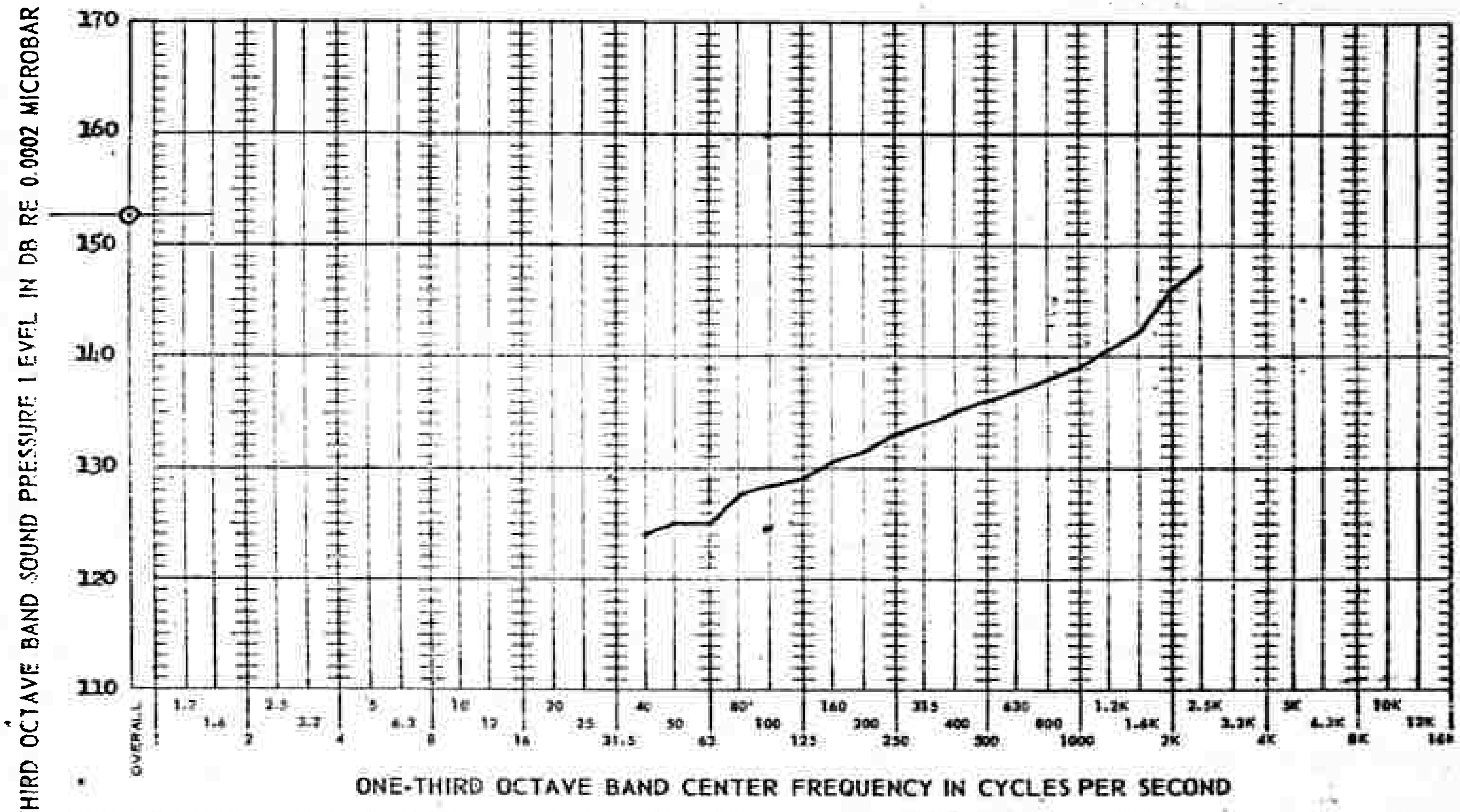
Test Point #12 Mach No. 1.08 Correlation No. 501 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



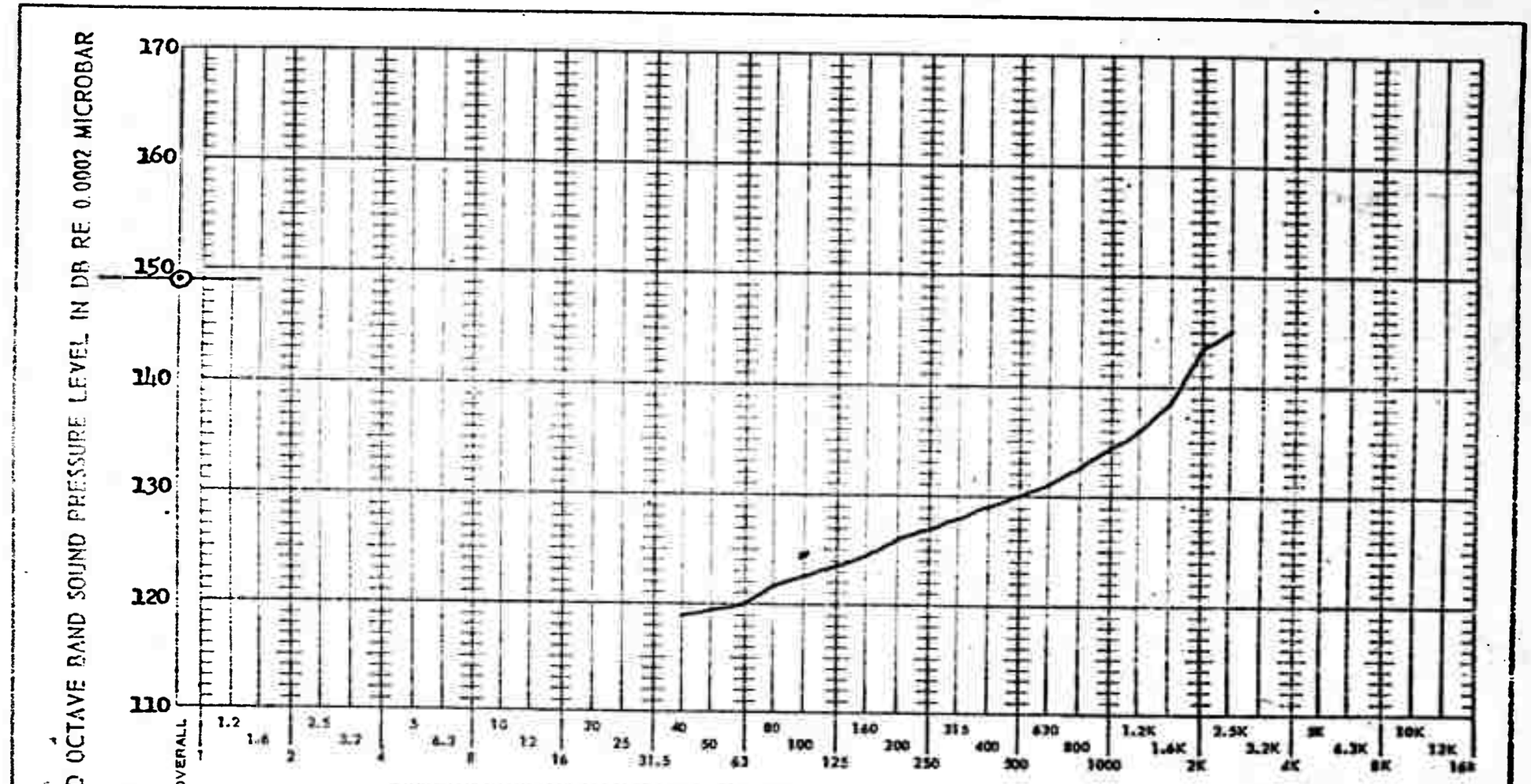
Test Point #14 Mach No. 0.95 Correlation No. 404 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



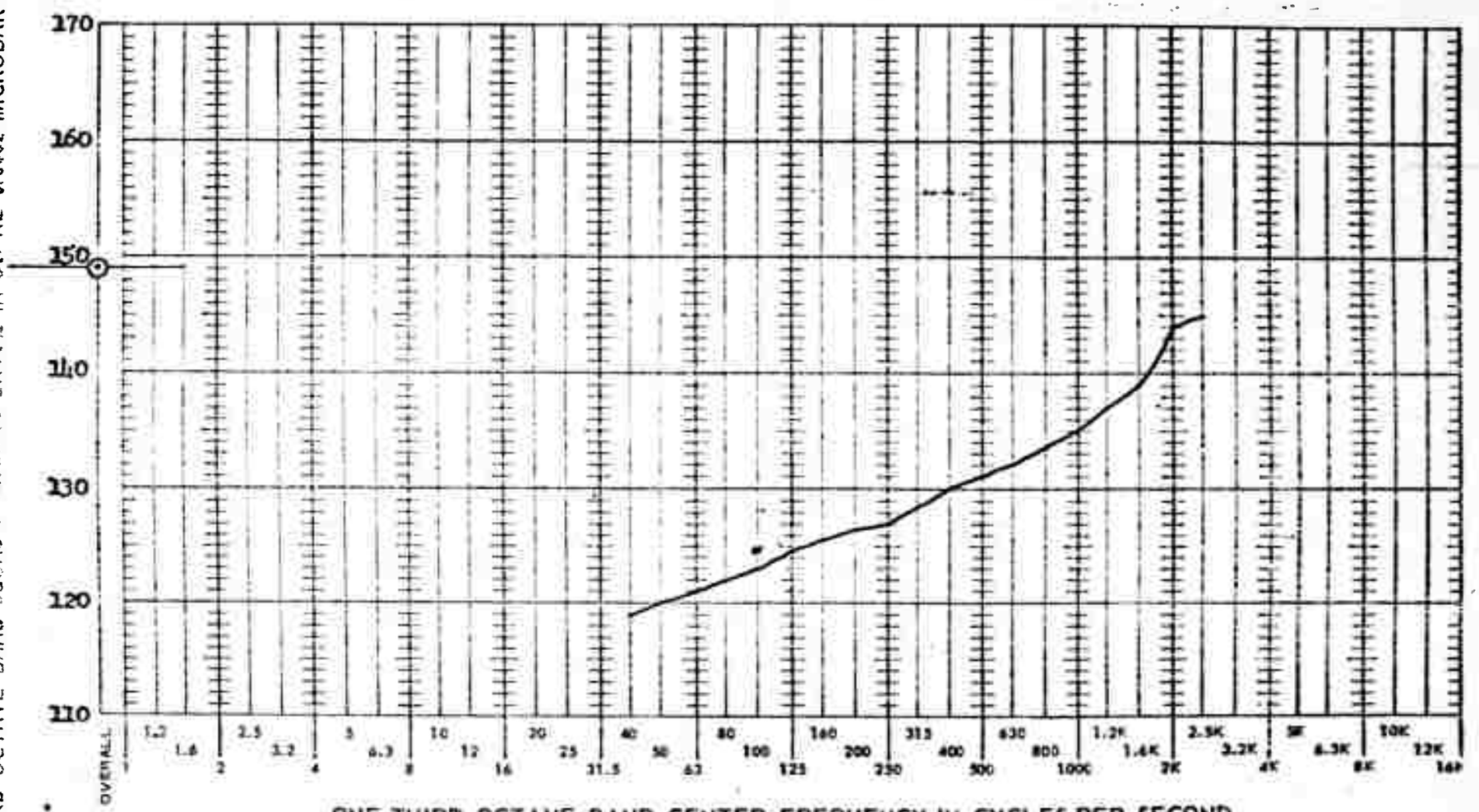
Test Point #14 Mach No. 1.08 Correlation No. 408 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



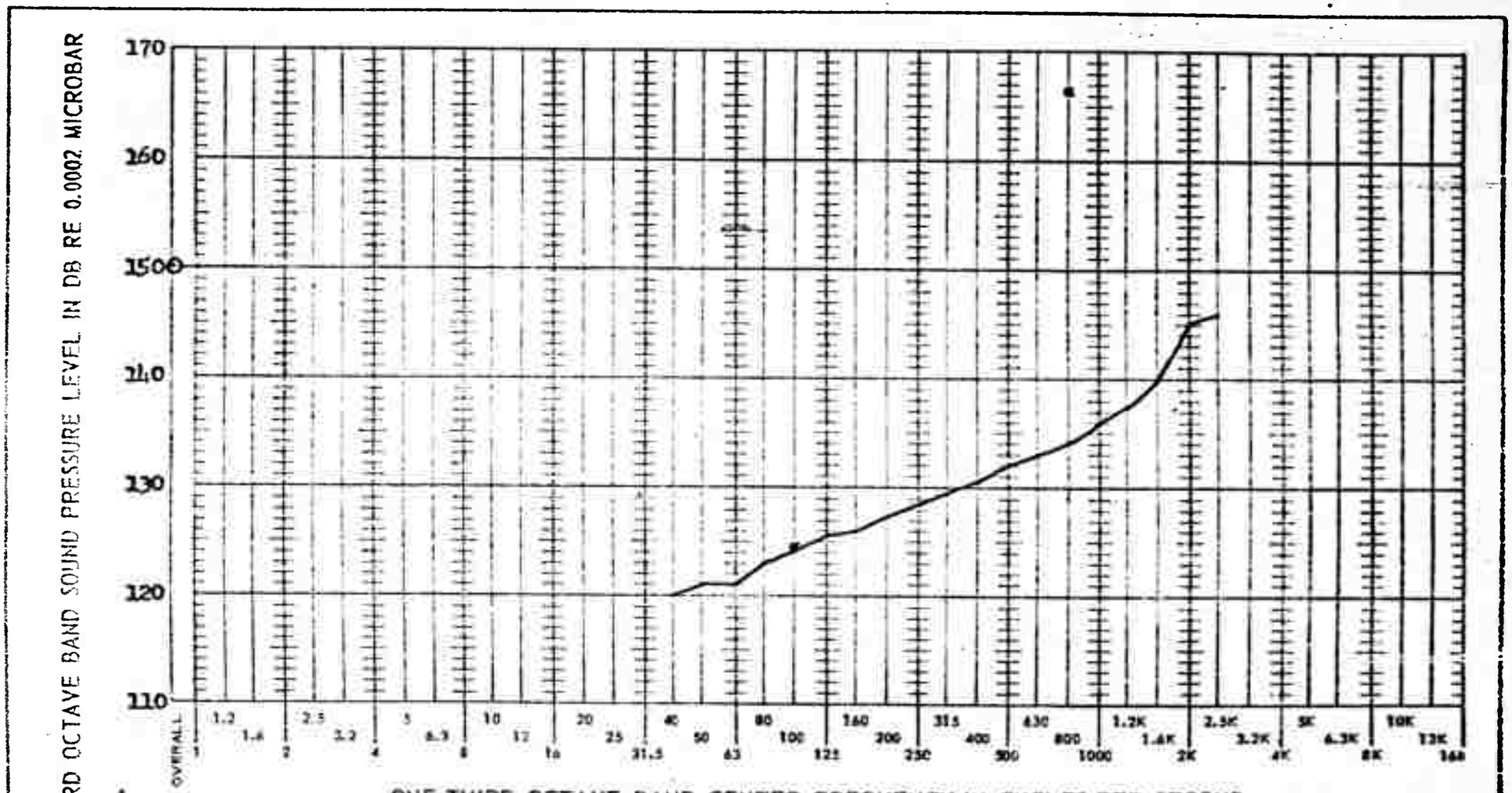
Test Point #14 Mach No. 1.0 Correlation No. 491 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



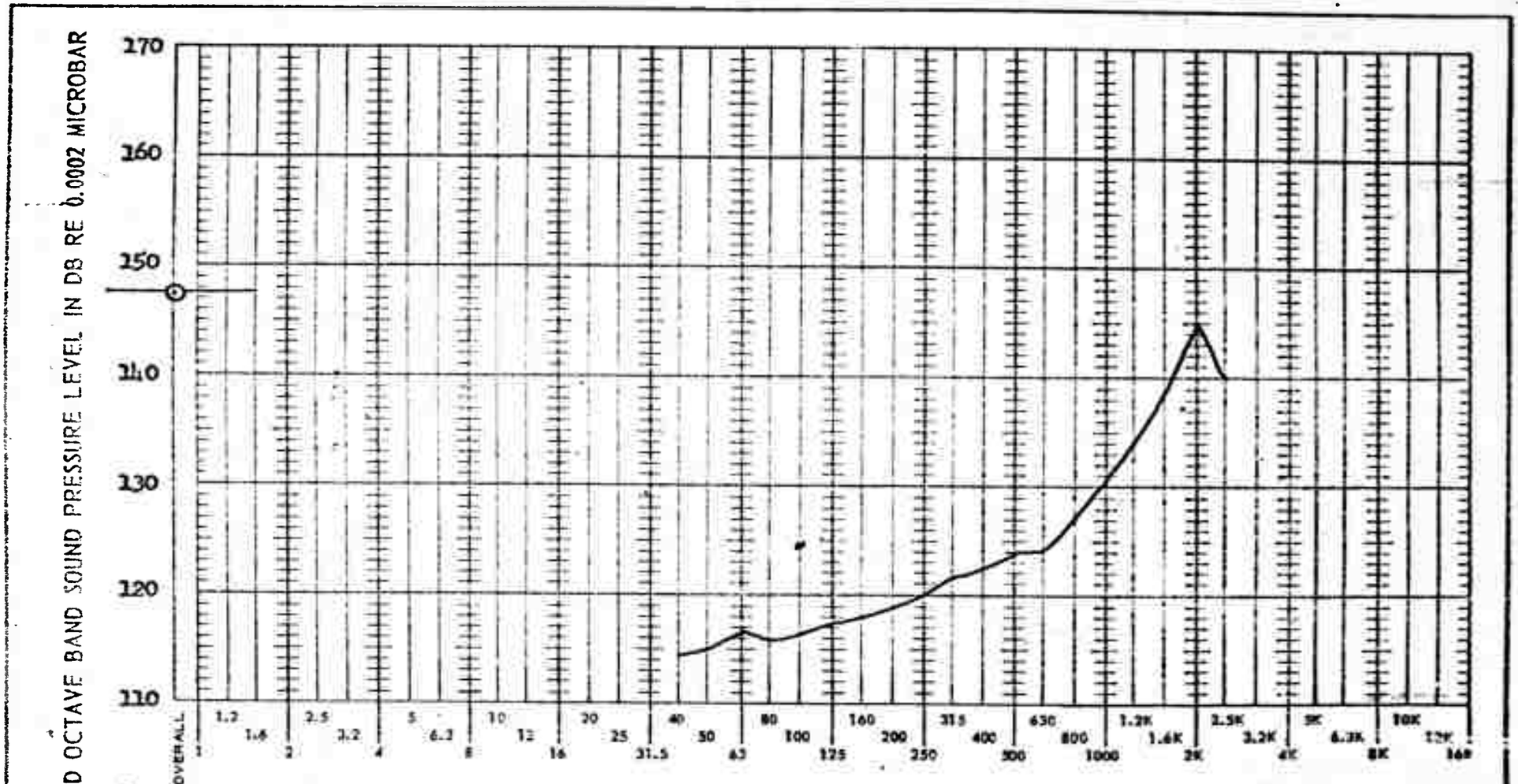
Test Point #14 Mach No. 1.02 Correlation No. 492 $\alpha = 4^\circ$ $\beta = -7^\circ$

Figure 14 (Continued)



Test Point #14 Mach No. 1.04 Correlation No. 497 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



Test Point #16 Mach No. 1.0 Correlation No. 491 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)

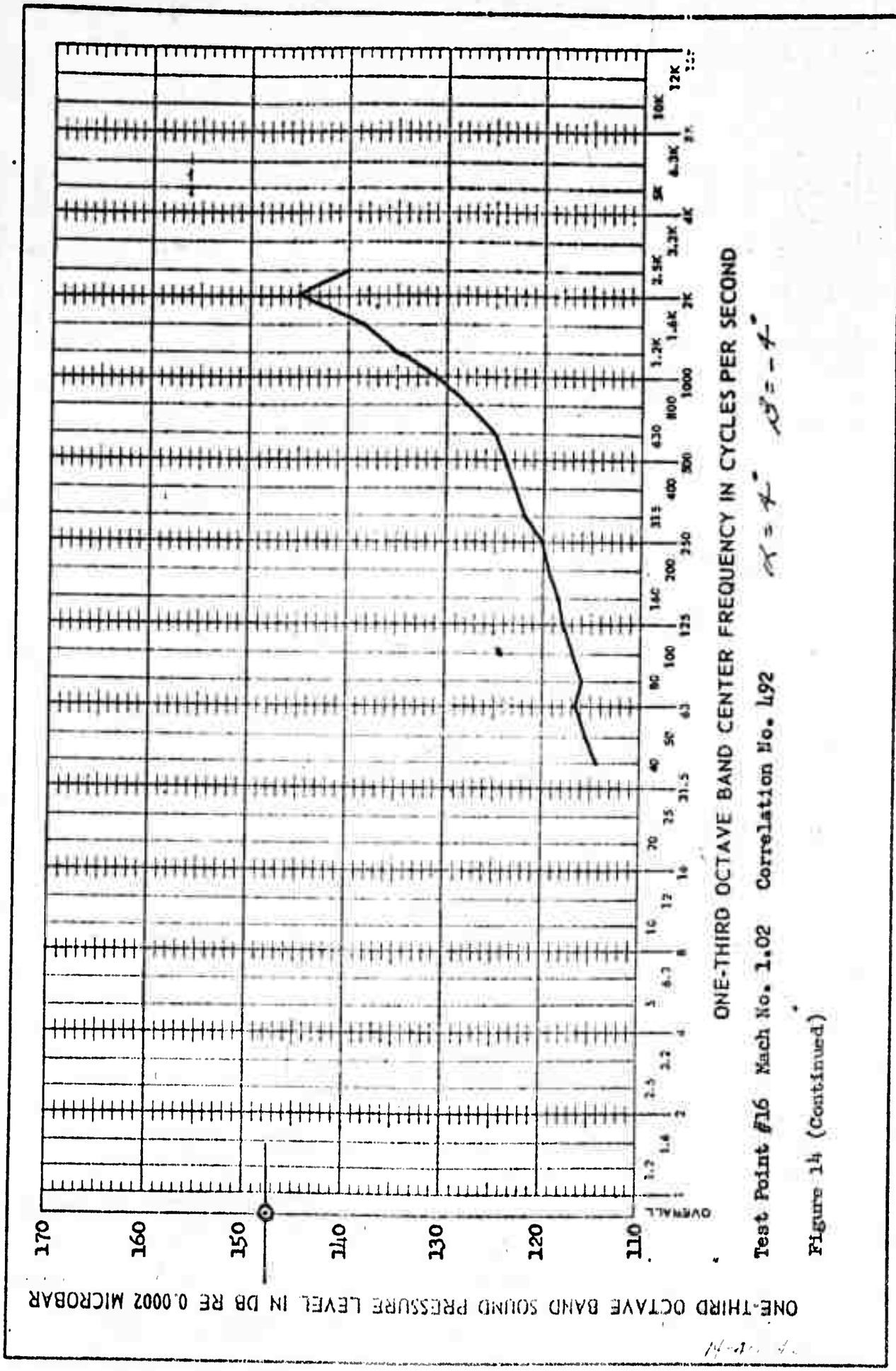
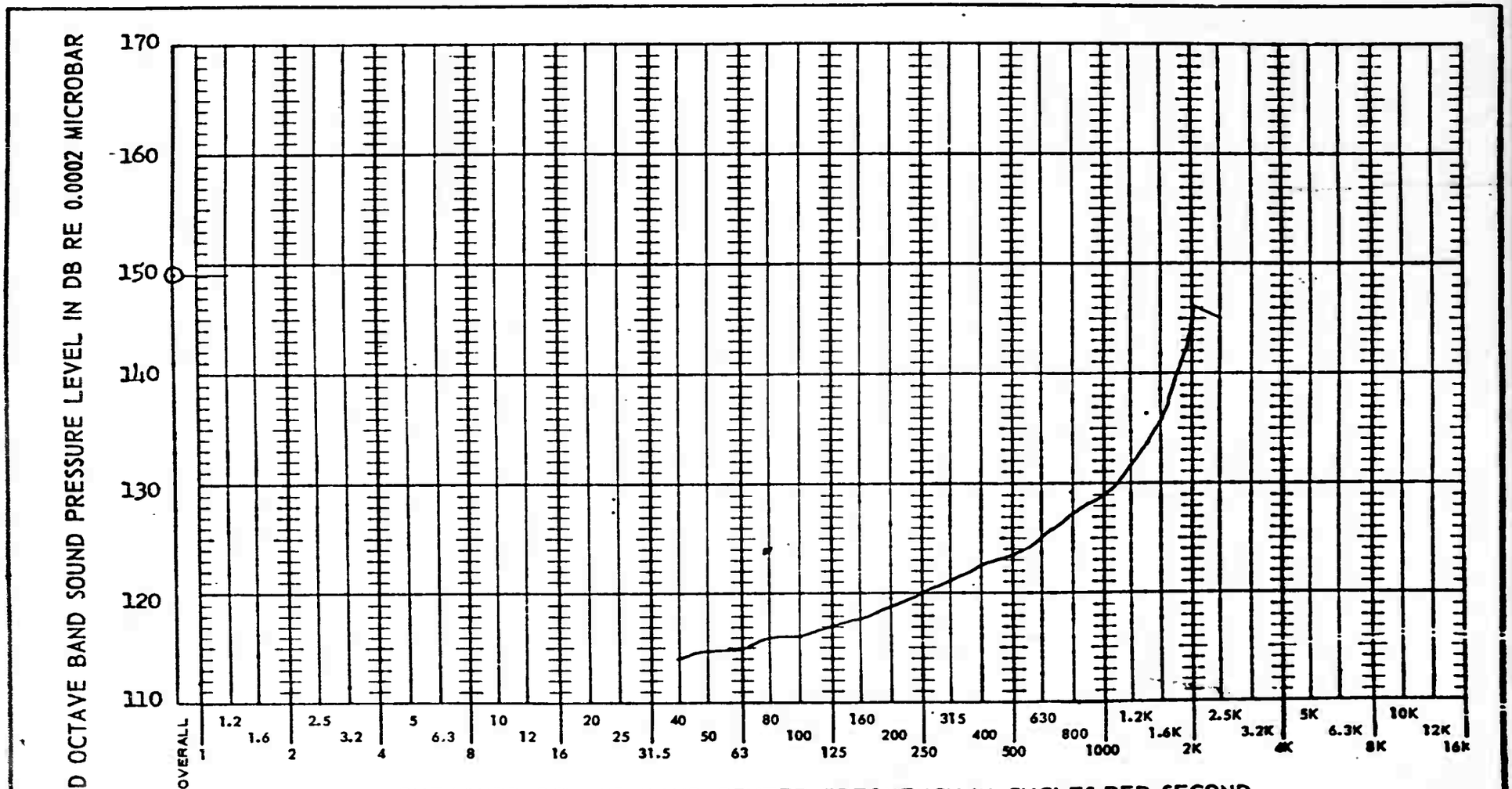
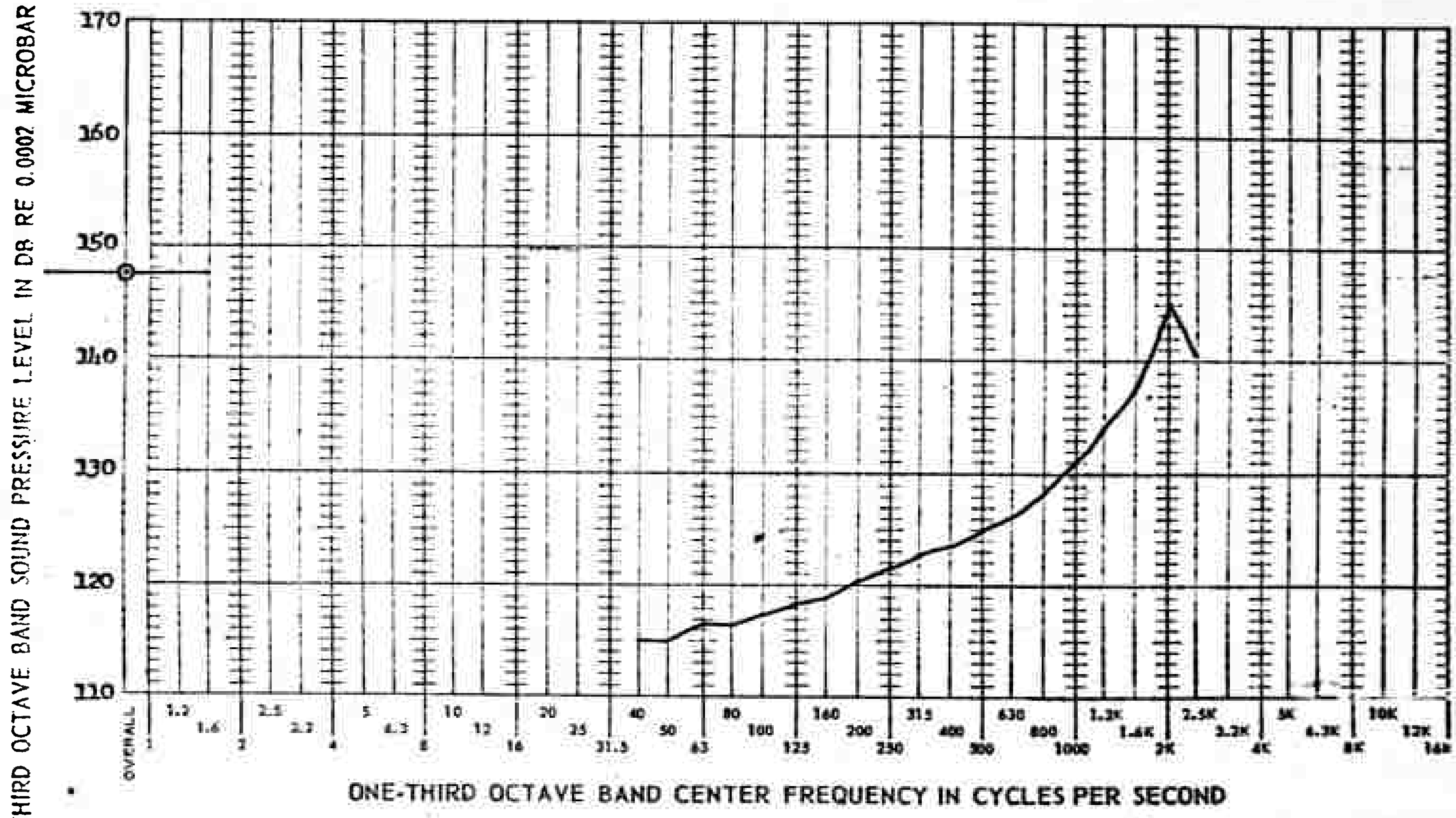


Figure 14 (Continued)



Test Point #7 Mach No. 1.08 Correlation No. 502 $\alpha = 0°$ $\beta = -4°$

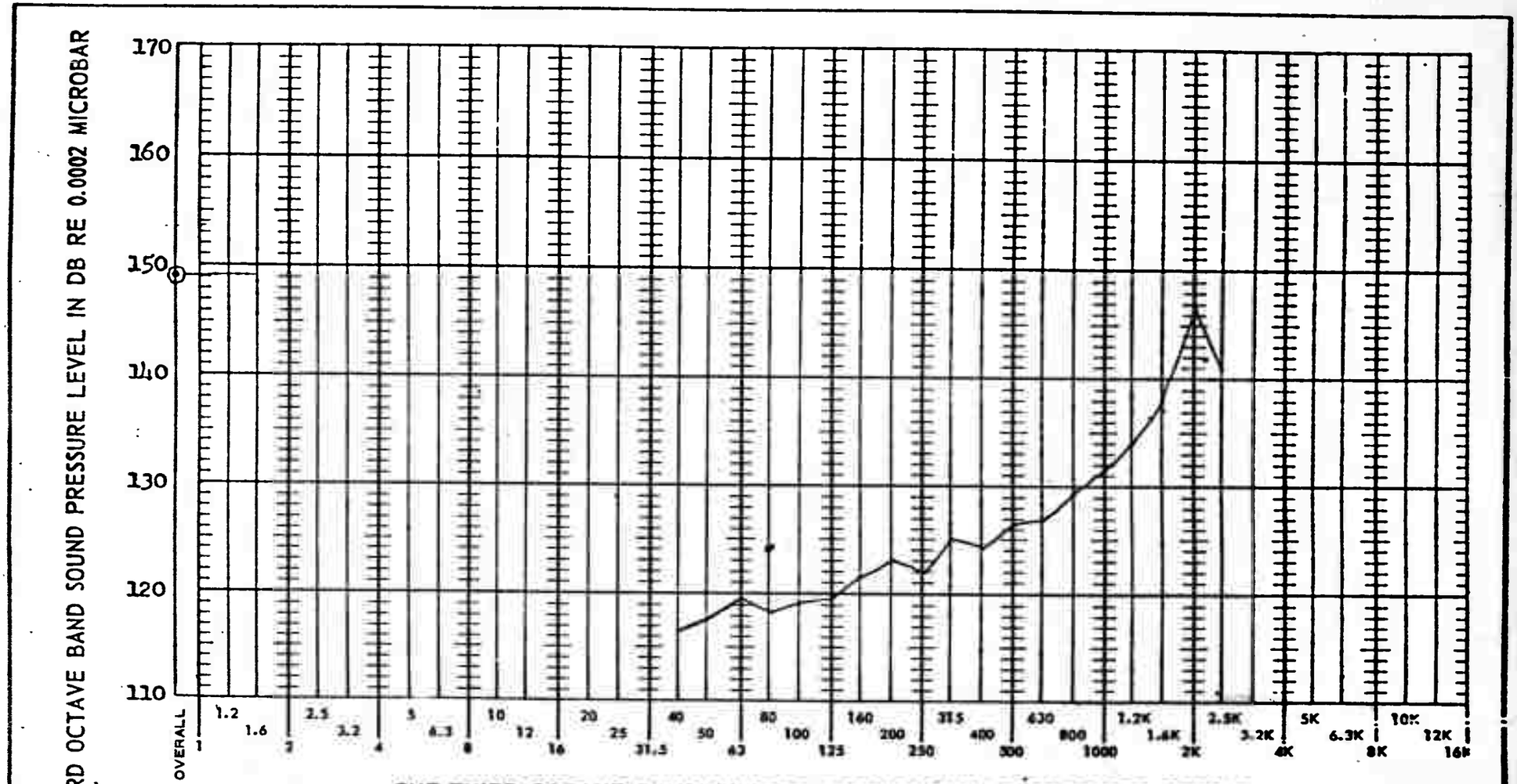
Figure 14 (Continued)



Test Point #16 Mach No. 1.04 Correlation No. 497 $\alpha = 4^\circ$ $\beta = -4^\circ$

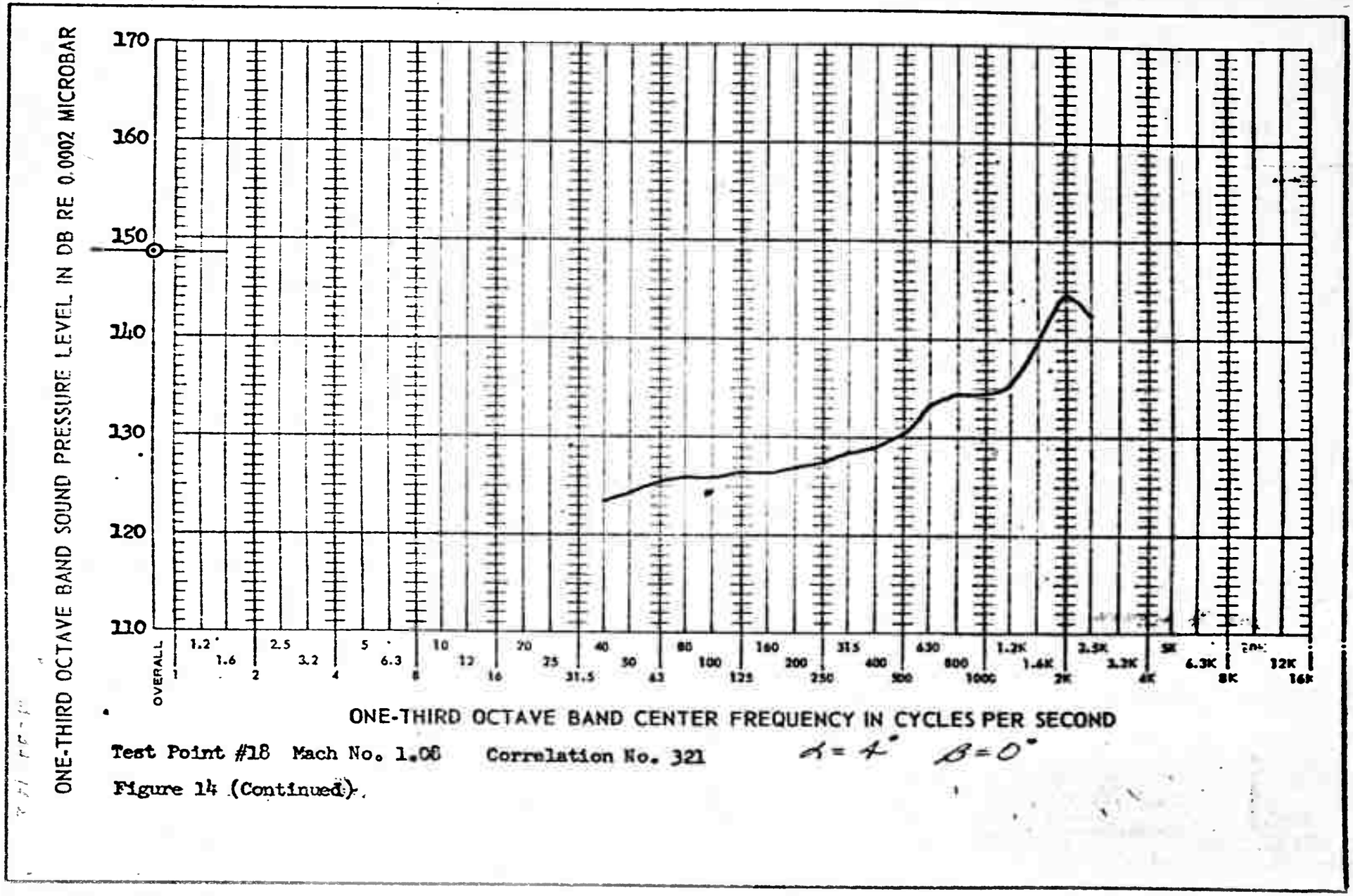
(Figure 14 (Continued)

115



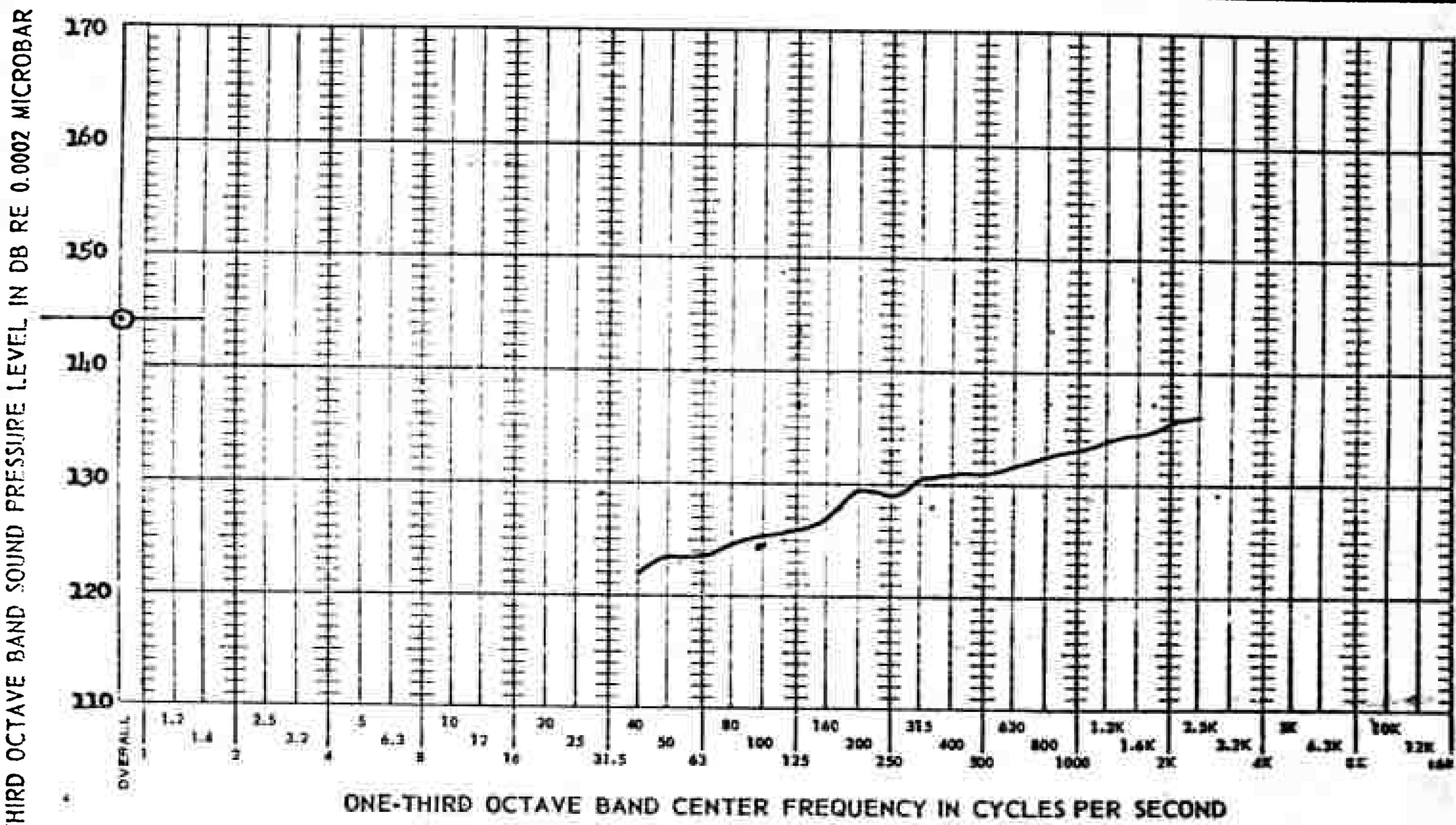
Test Point #18 Mach No. 0.95 Correlation No. 315 $\alpha = 4^\circ$ $\beta = 0^\circ$

Figure 14 (Continued)



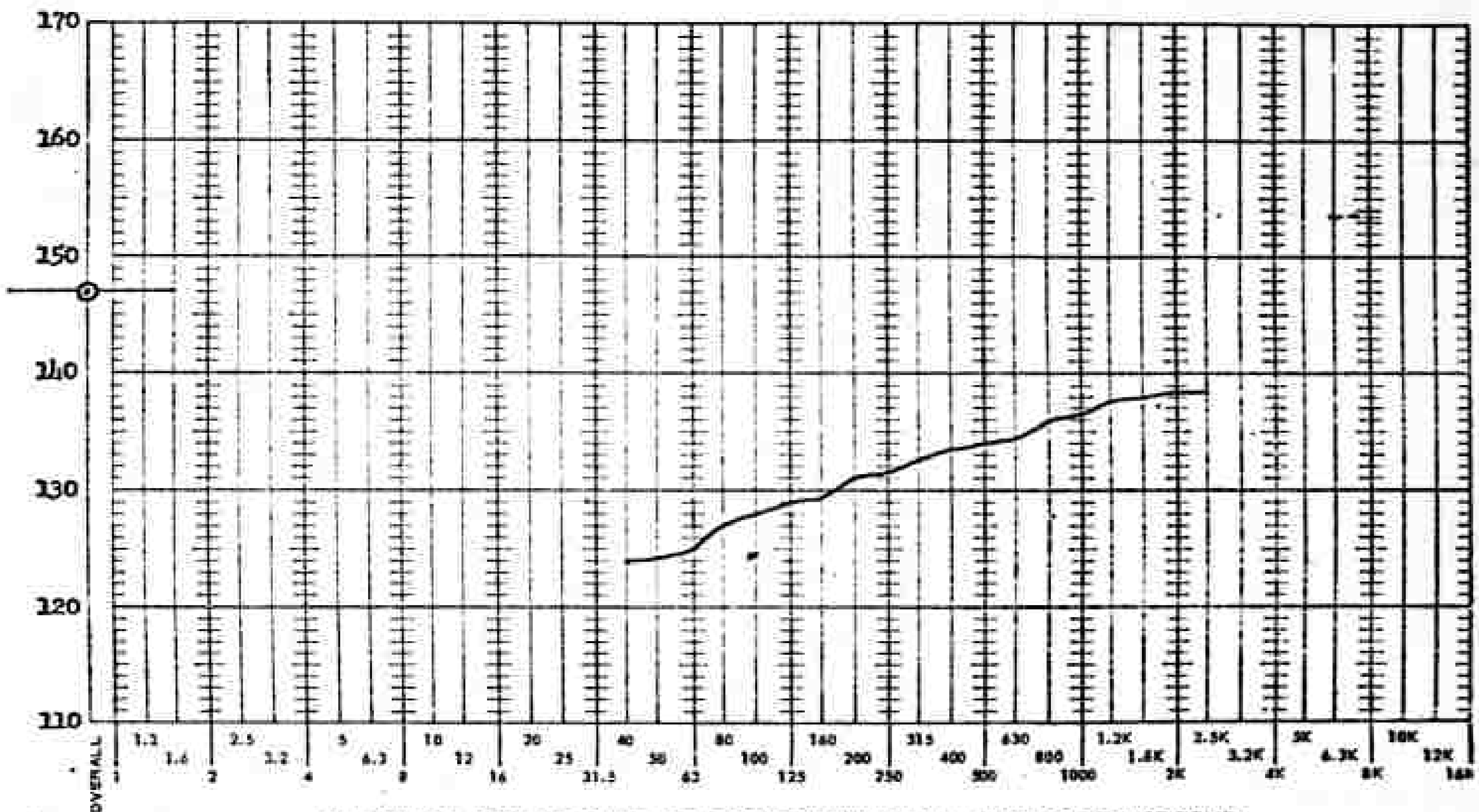
Test Point #18 Mach No. 1.06 Correlation No. 321 $\alpha = 4^\circ$ $\beta = 0^\circ$

Figure 14 (Continued).



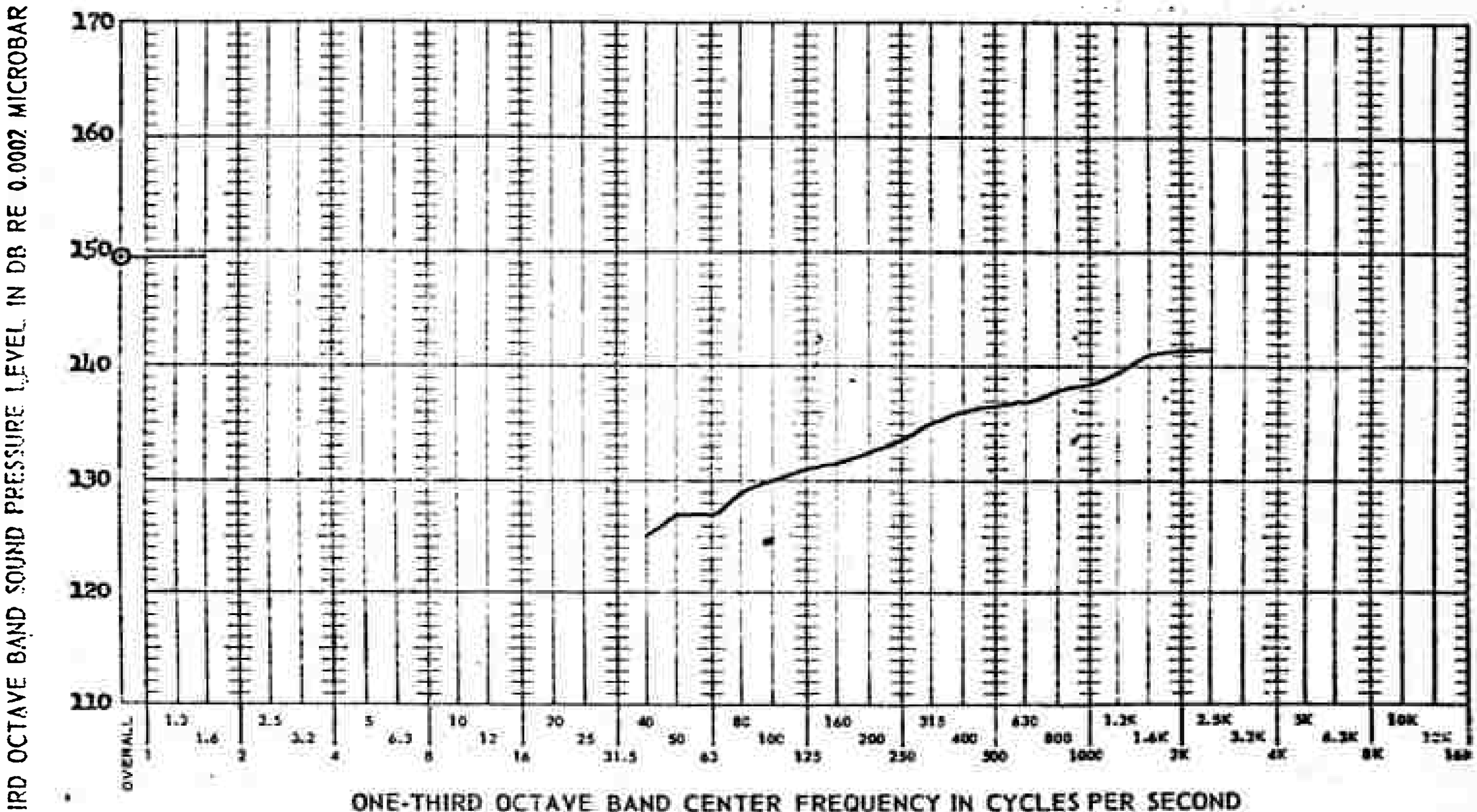
Test Point #20 Mach No. 0.8 Correlation No. 356 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



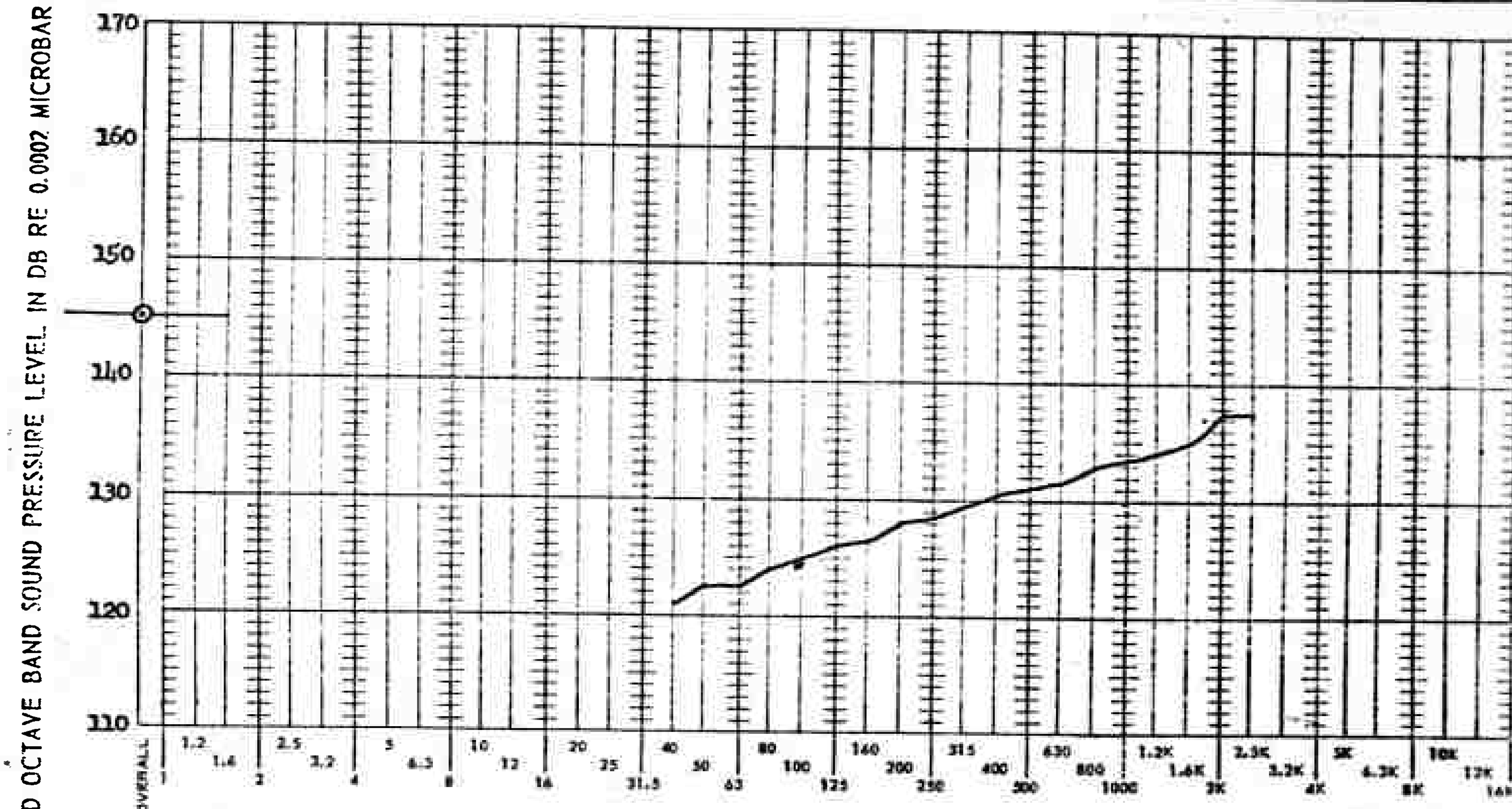
Test Point #20 Mach No. 0.85 Correlation No. 357 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



Test Point #20 Mach No. 0.9 Correlation No. 360 $\alpha = 0°$ $\beta = -4°$

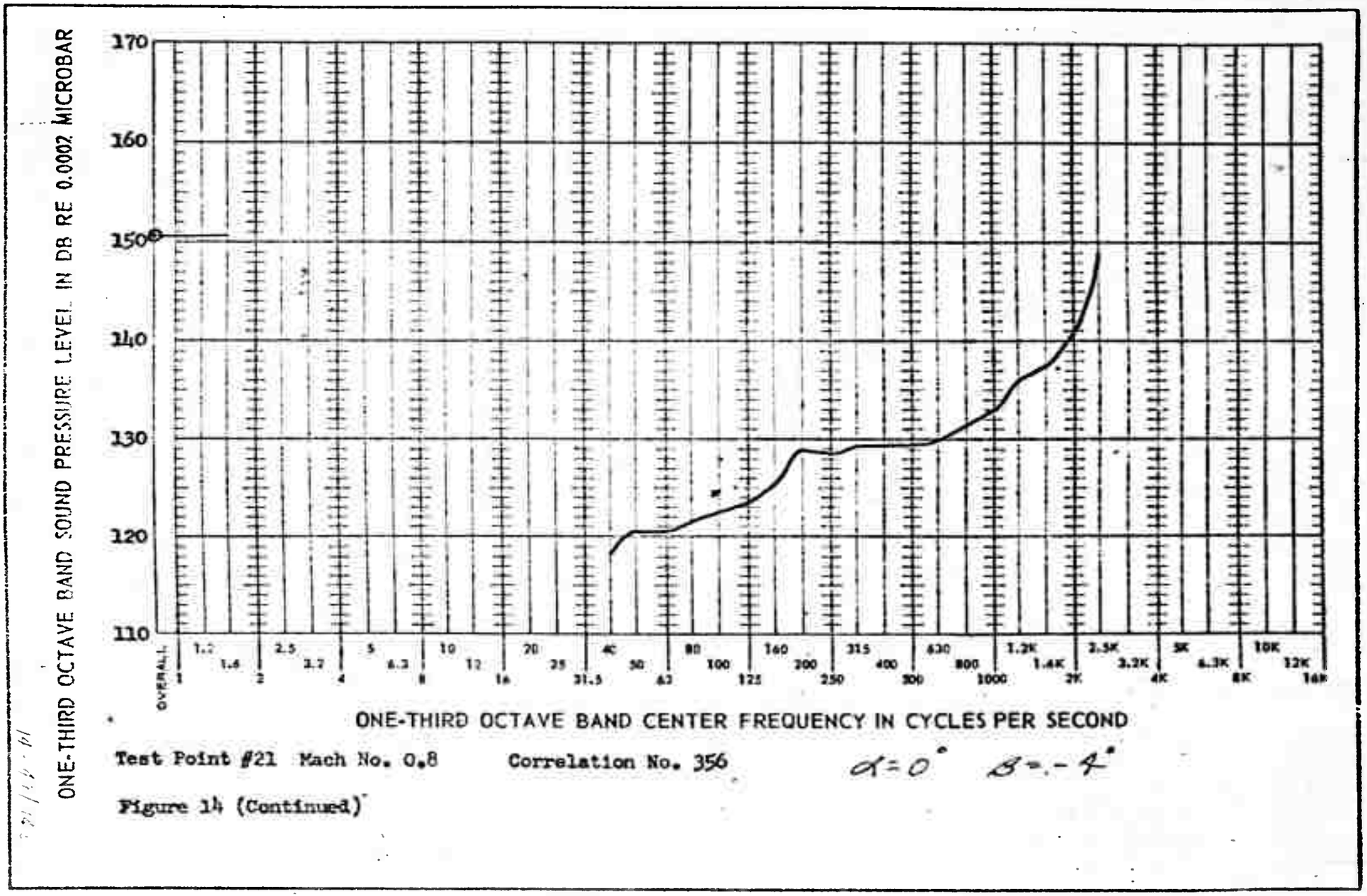
Figure 14 (Continued)



ONE-THIRD OCTAVE BAND CENTER FREQUENCY IN CYCLES PER SECOND

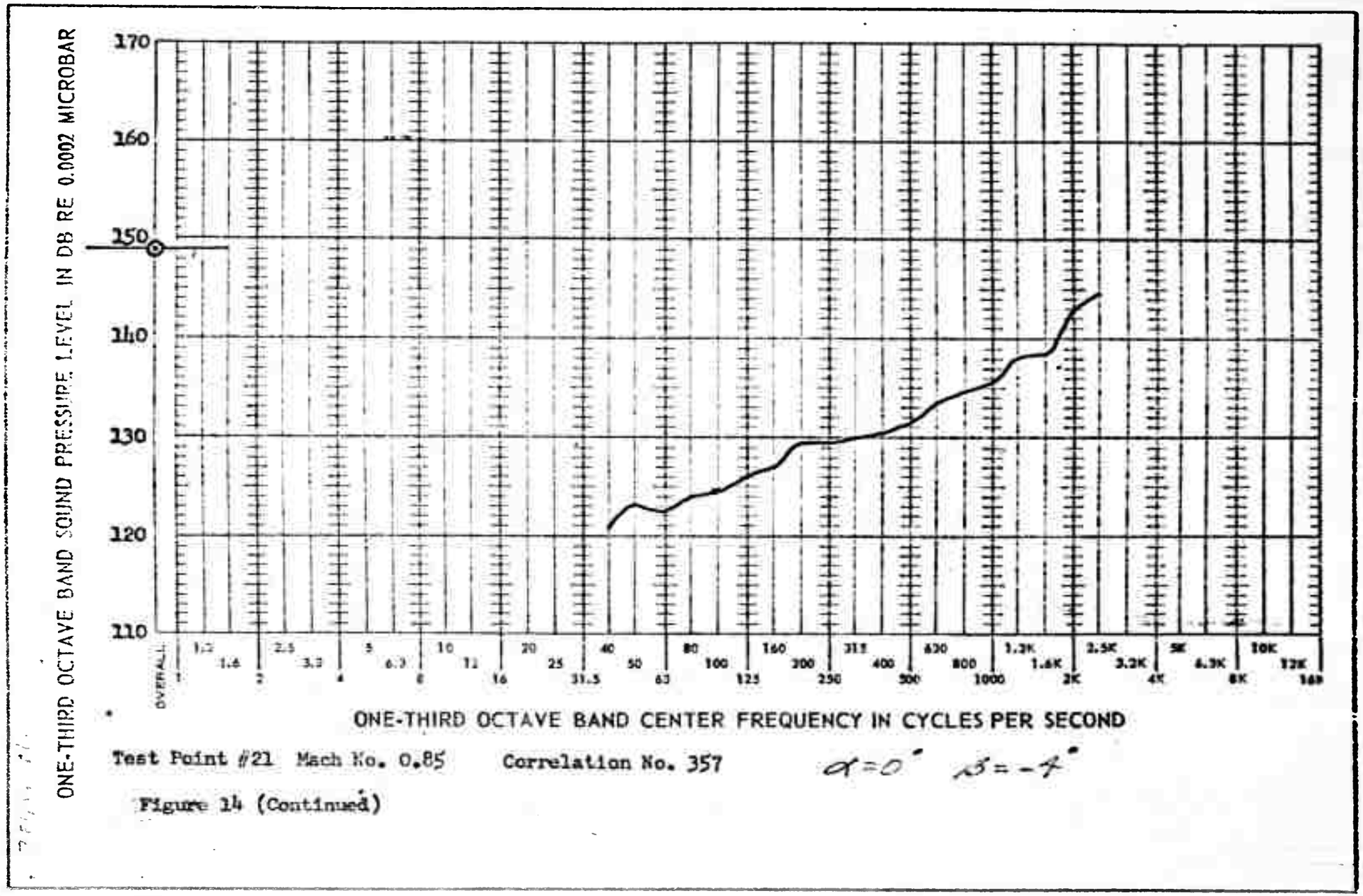
Test Point #20 Mach No. 0.95 Correlation No. 361 α=0° β=-4°

Figure 14 (Continued)



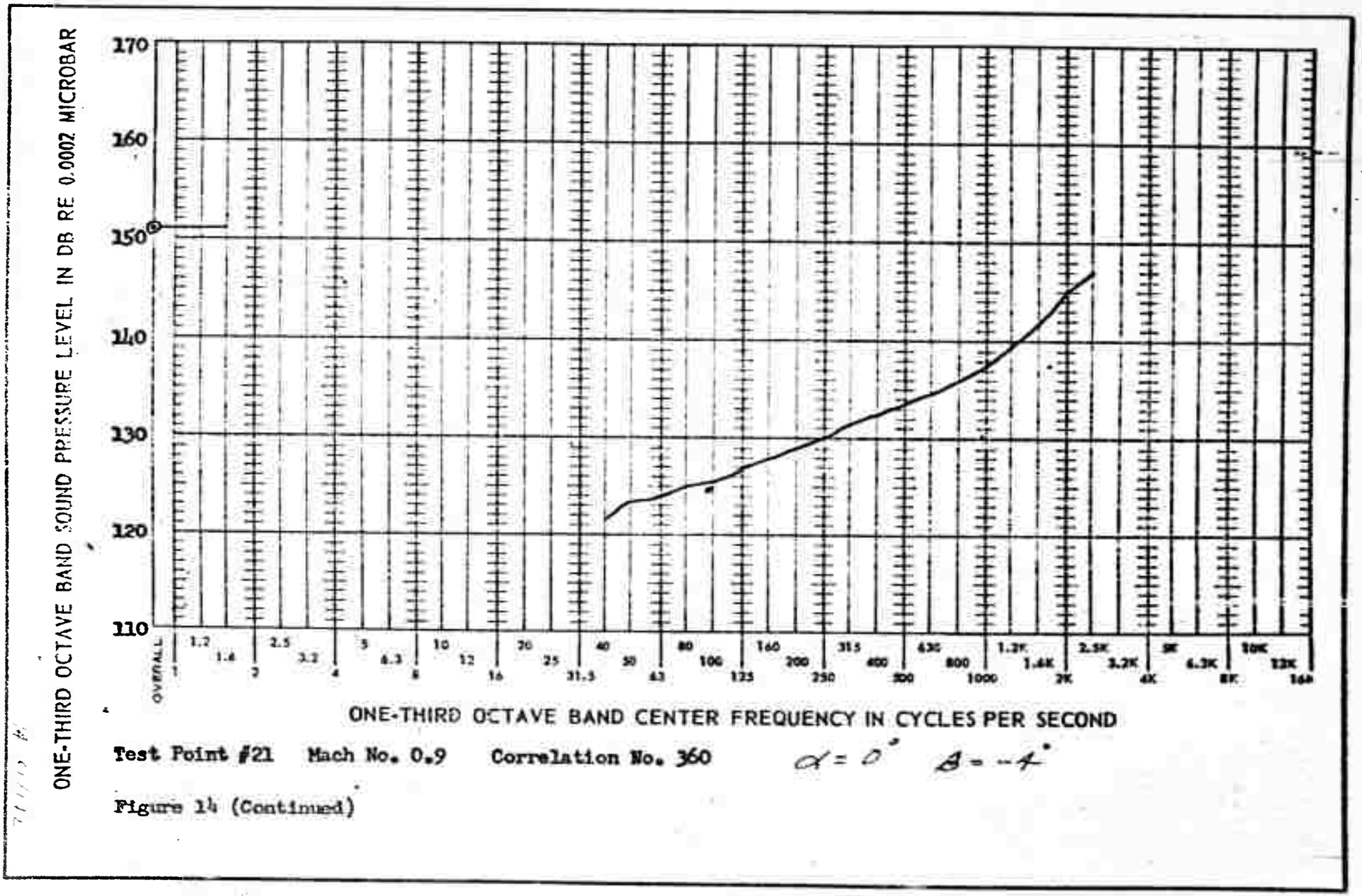
Test Point #21 Mach No. 0.8 Correlation No. 356 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



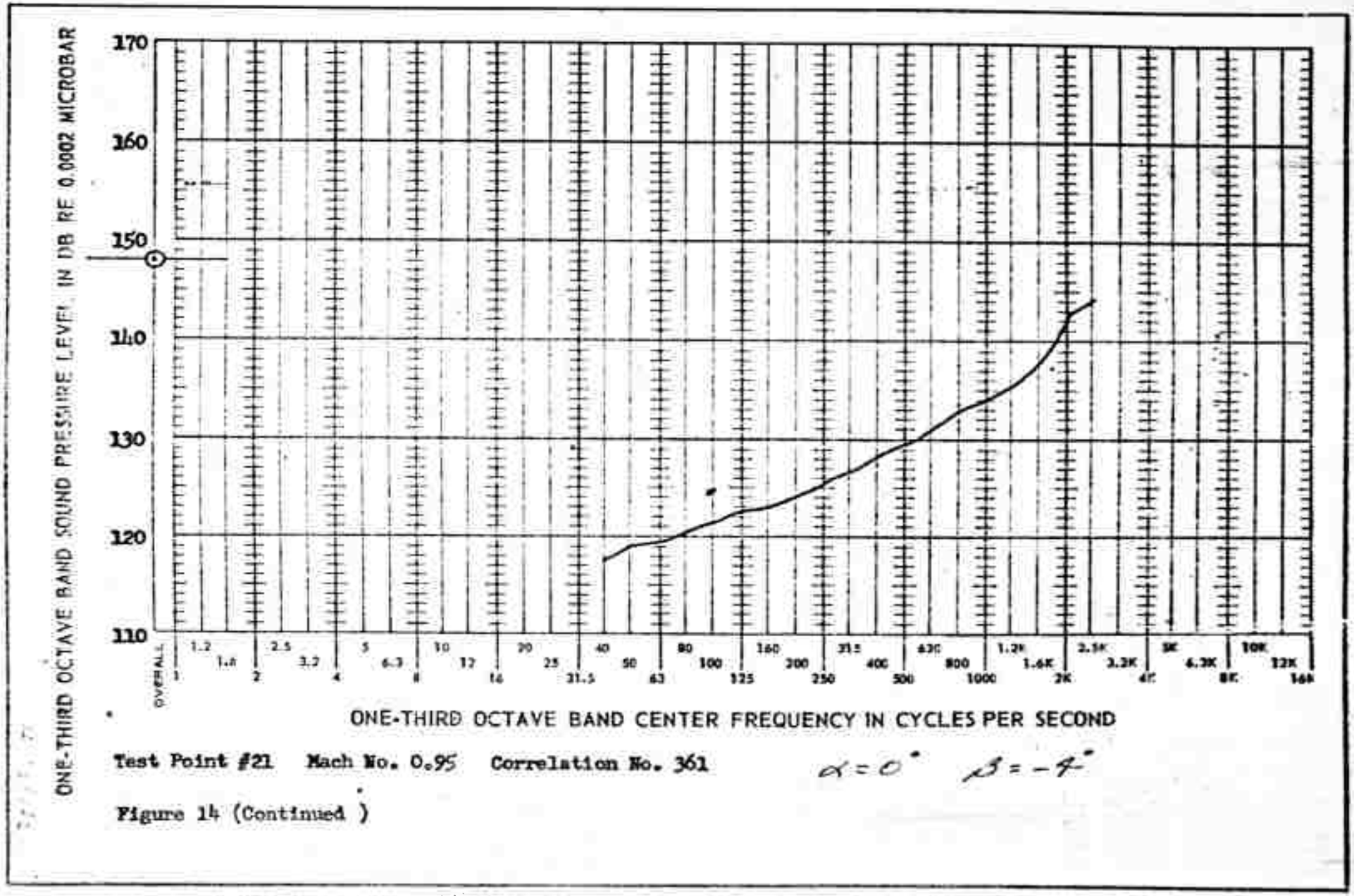
Test Point #21 Mach No. 0.85 Correlation No. 357 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



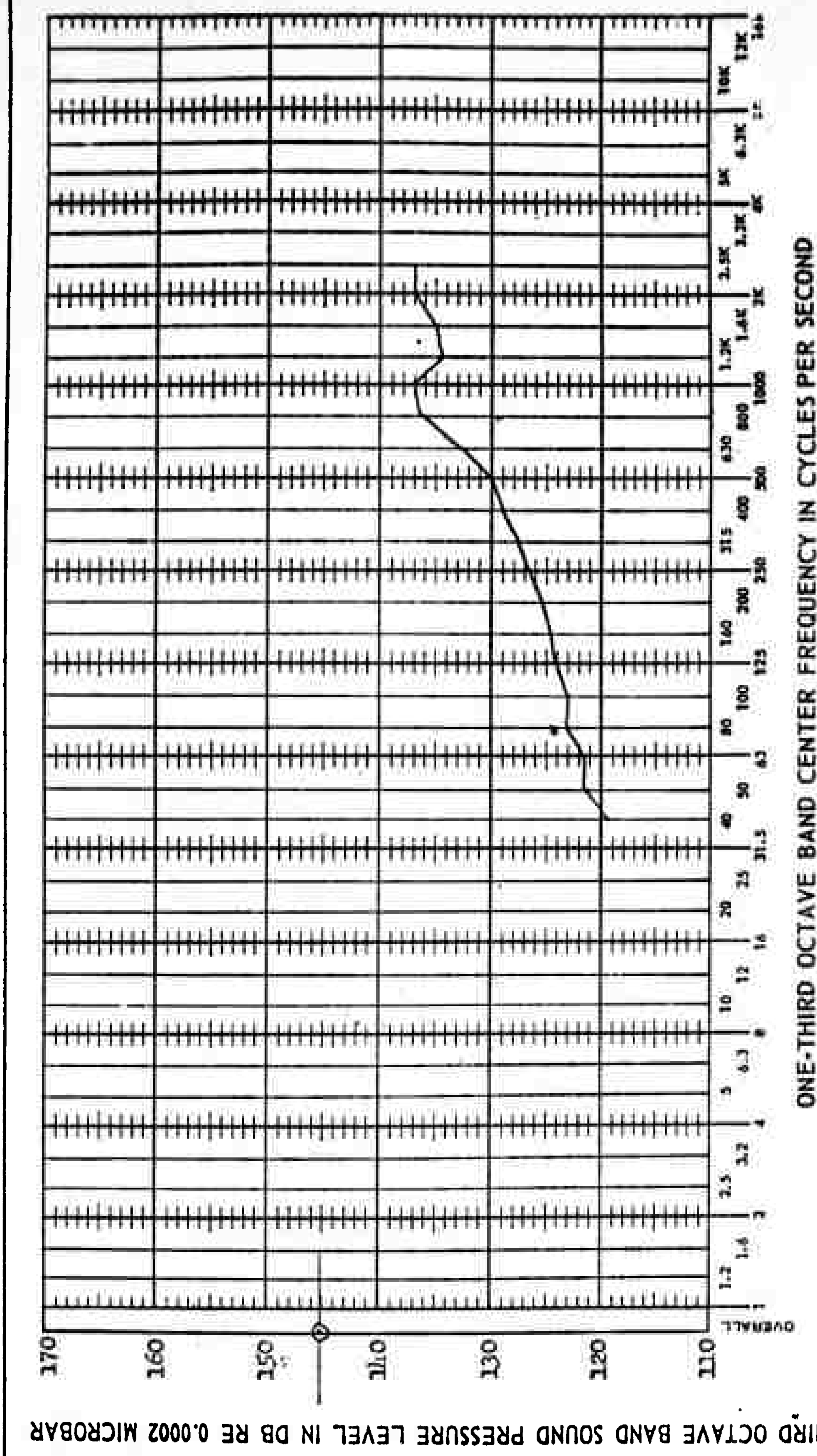
Test Point #21 Mach No. 0.9 Correlation No. 360 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



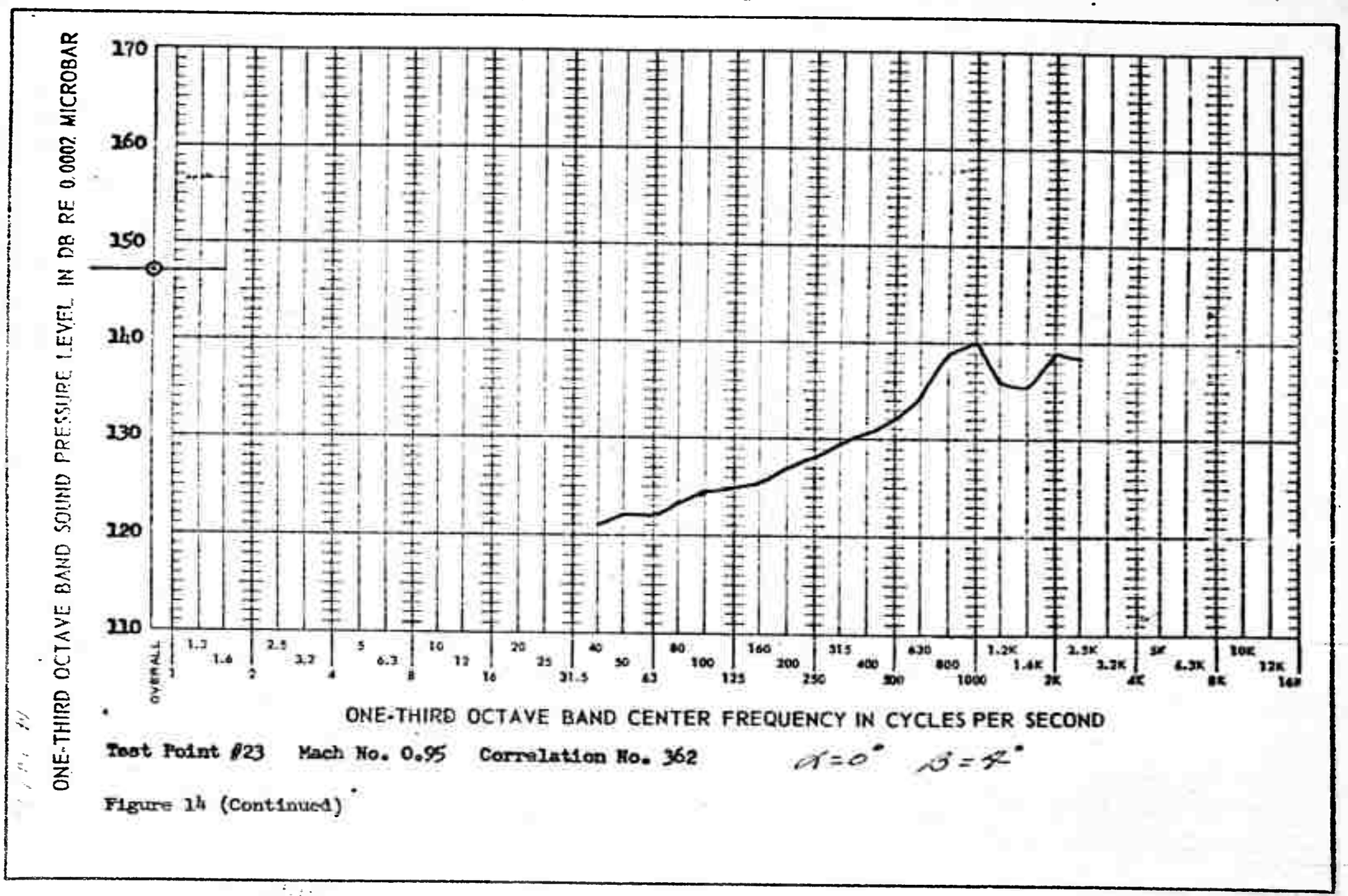
Test Point #21 Mach No. 0.95 Correlation No. 361 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



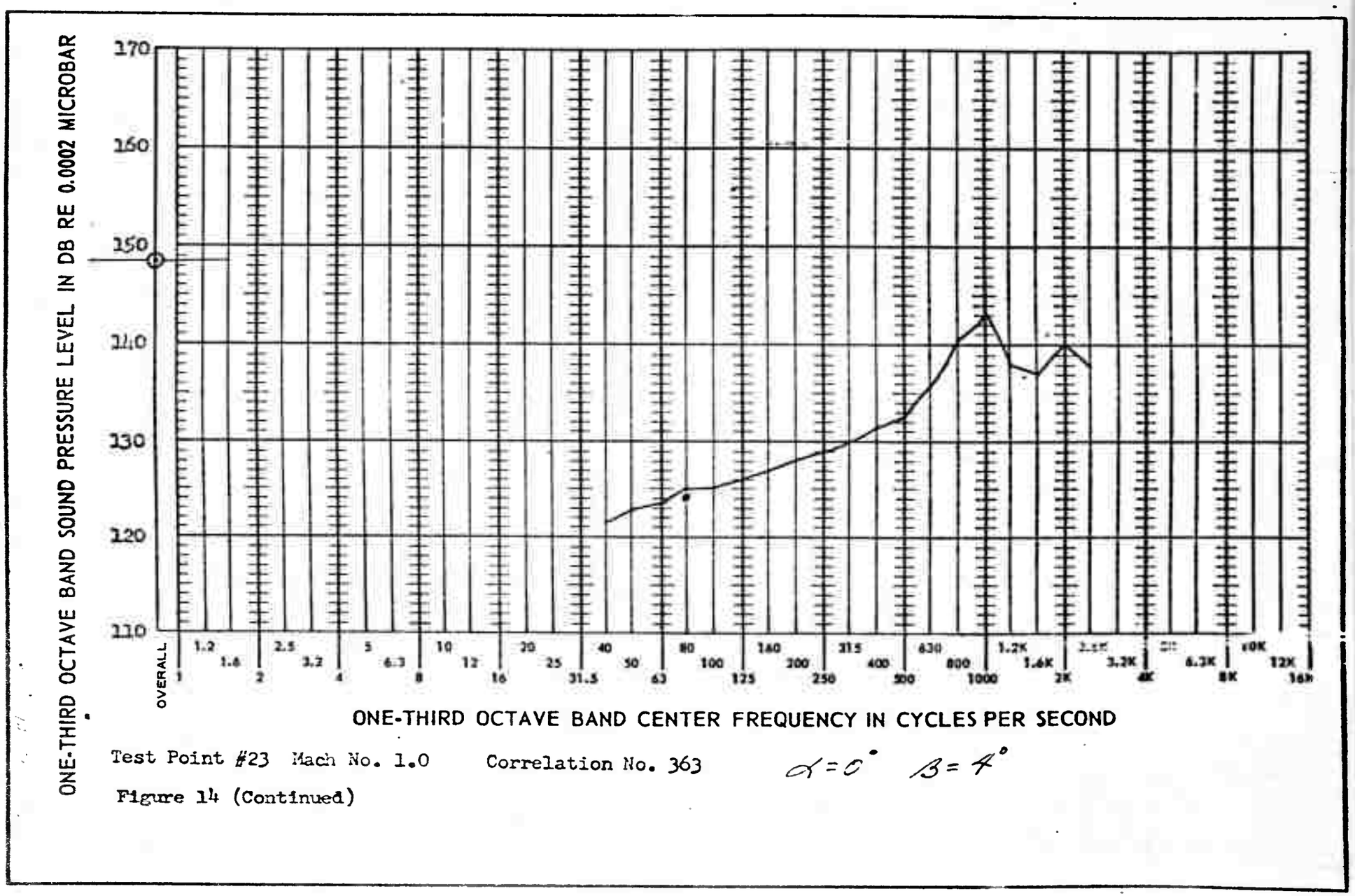
Test Point #23 Mach No. 0.9 Correlation No. 359 $\alpha = 0°$, $\beta = 2°$

Figure 14 (Continued)



Test Point #23 Mach No. 0.95 Correlation No. 362 $\alpha = 0°$ $\beta = 3°$

Figure 14 (Continued)



Test Point #23 Mach No. 1.0 Correlation No. 363 $\alpha = 0°$ $\beta = 4°$

Figure 14 (Continued)

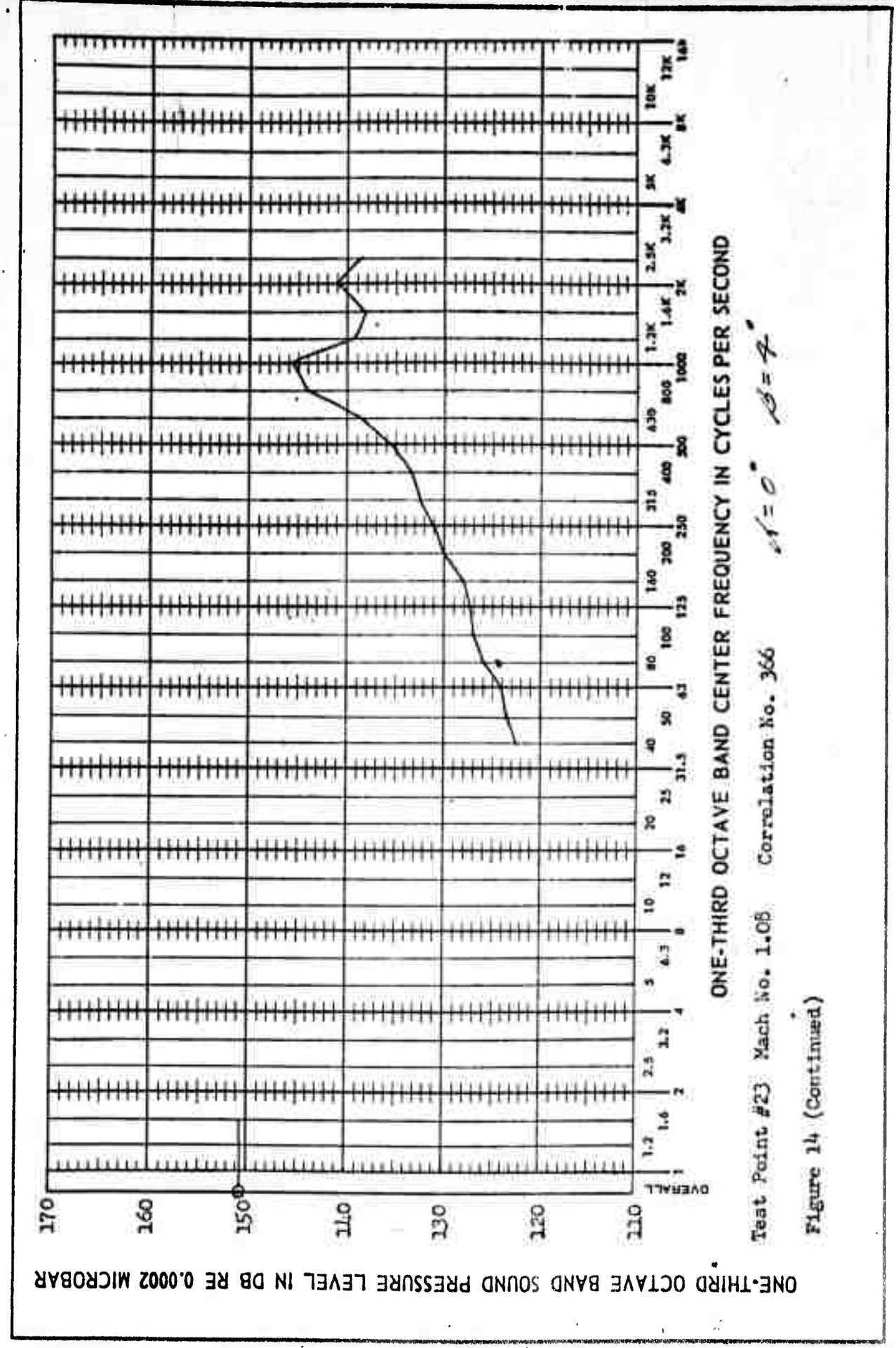
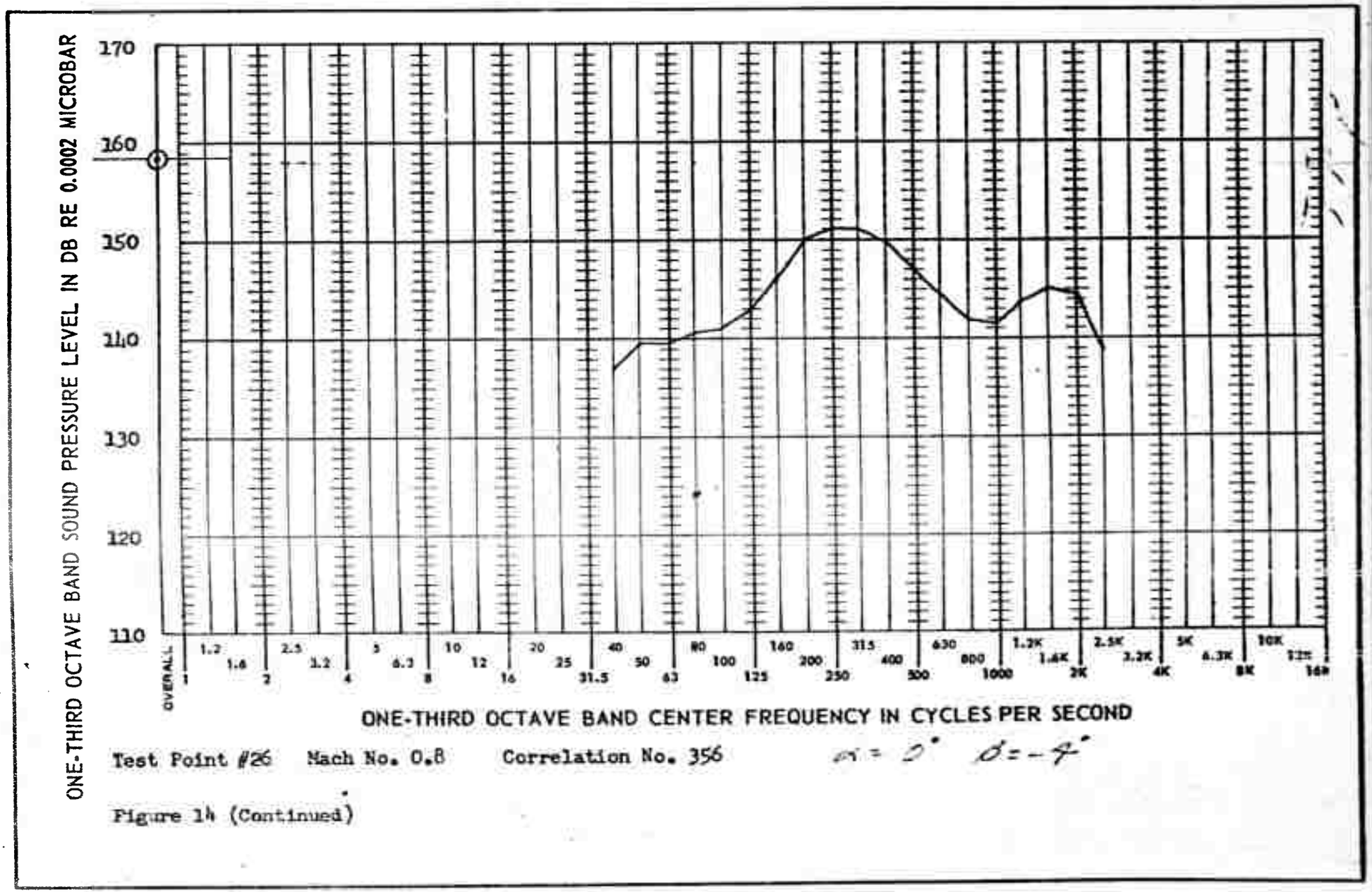


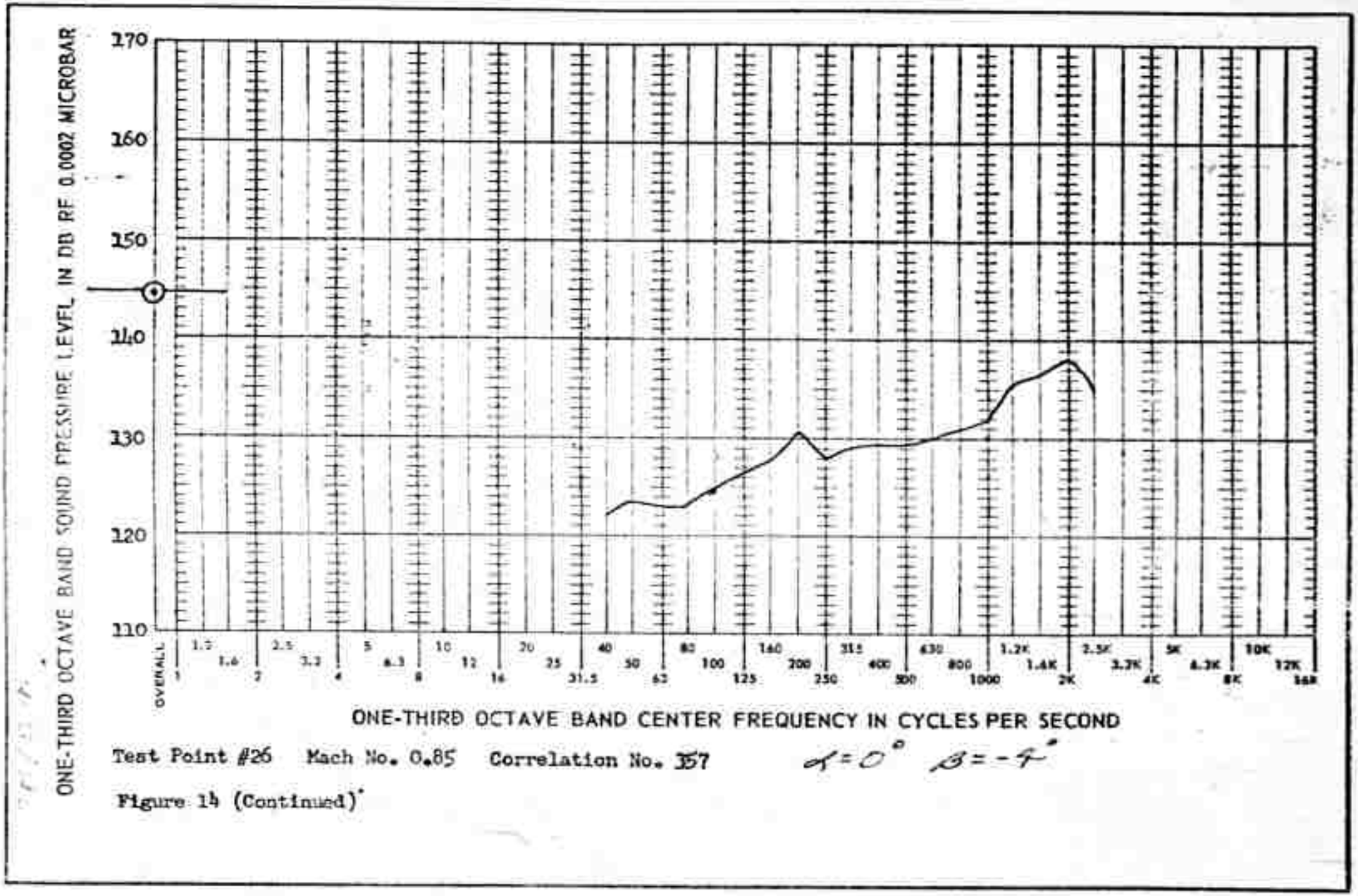
Figure 14 (Continued)

121



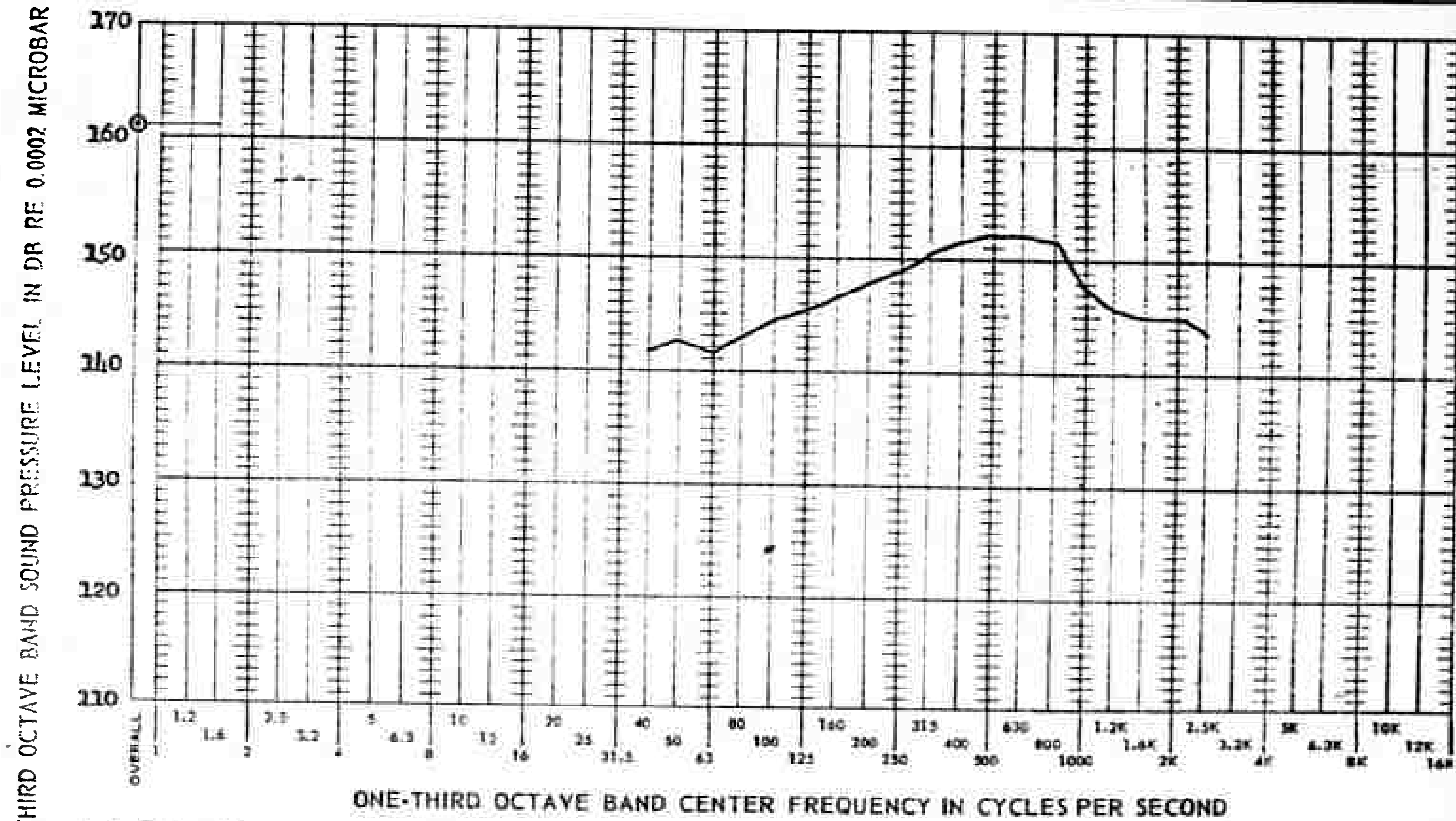
Test Point #26 Mach No. 0.8 Correlation No. 356 $\alpha = 0^\circ$ $\delta = -4^\circ$

Figure 14 (Continued)



Test Point #26 Mach No. 0.85 Correlation No. 357 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



Test Point #27 Mach No. 0.5 Correlation No. 458 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)

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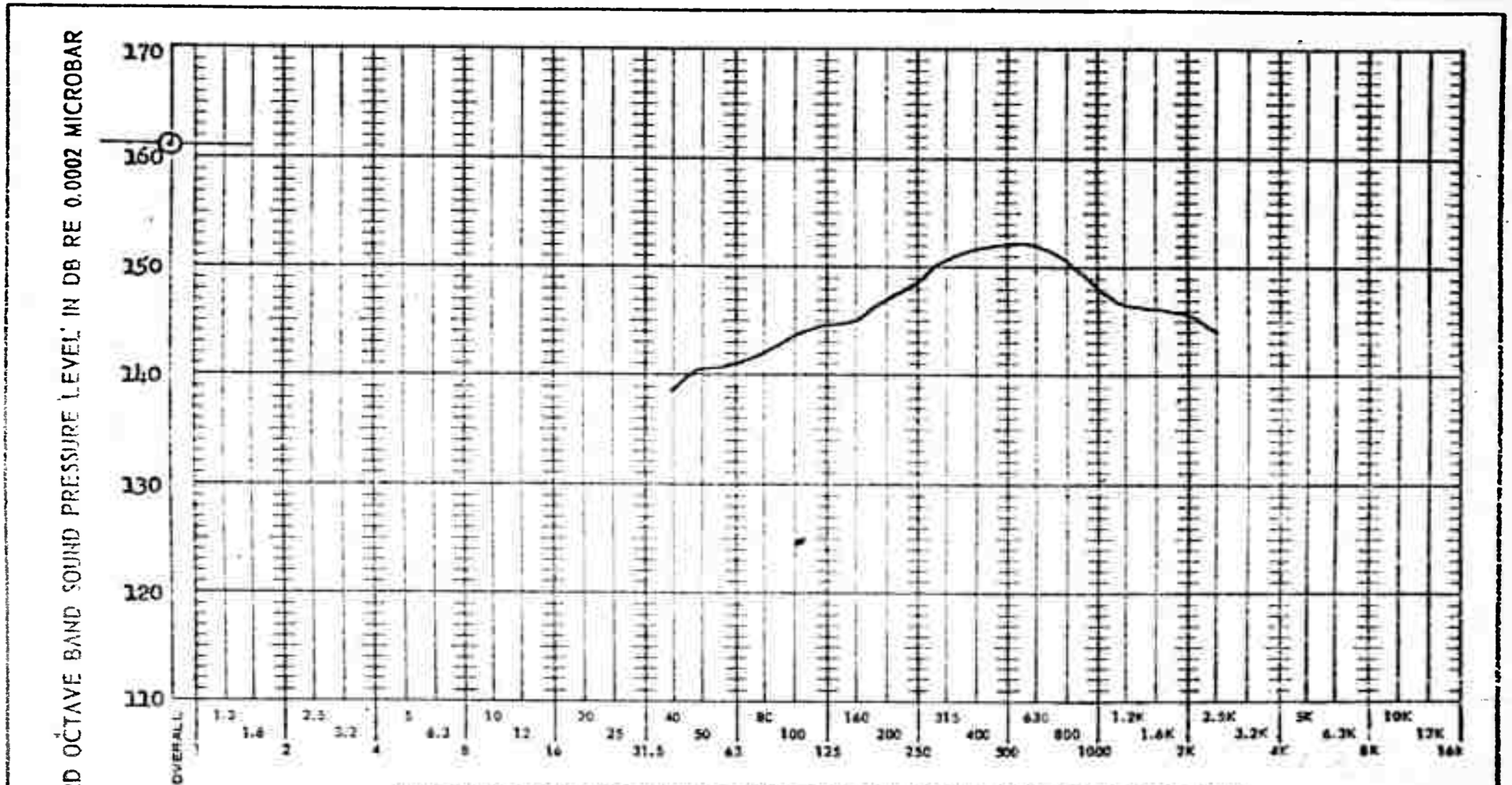
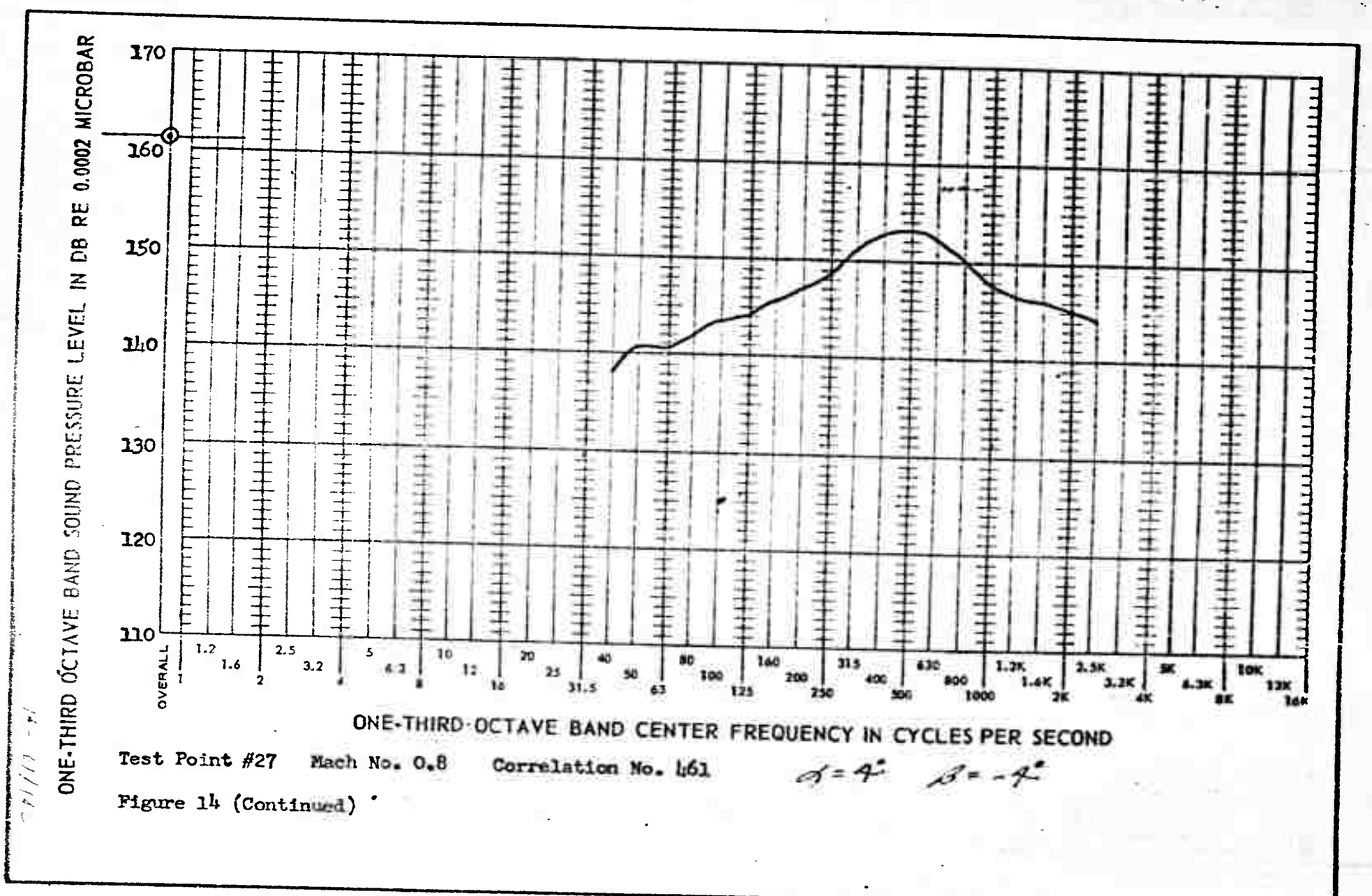


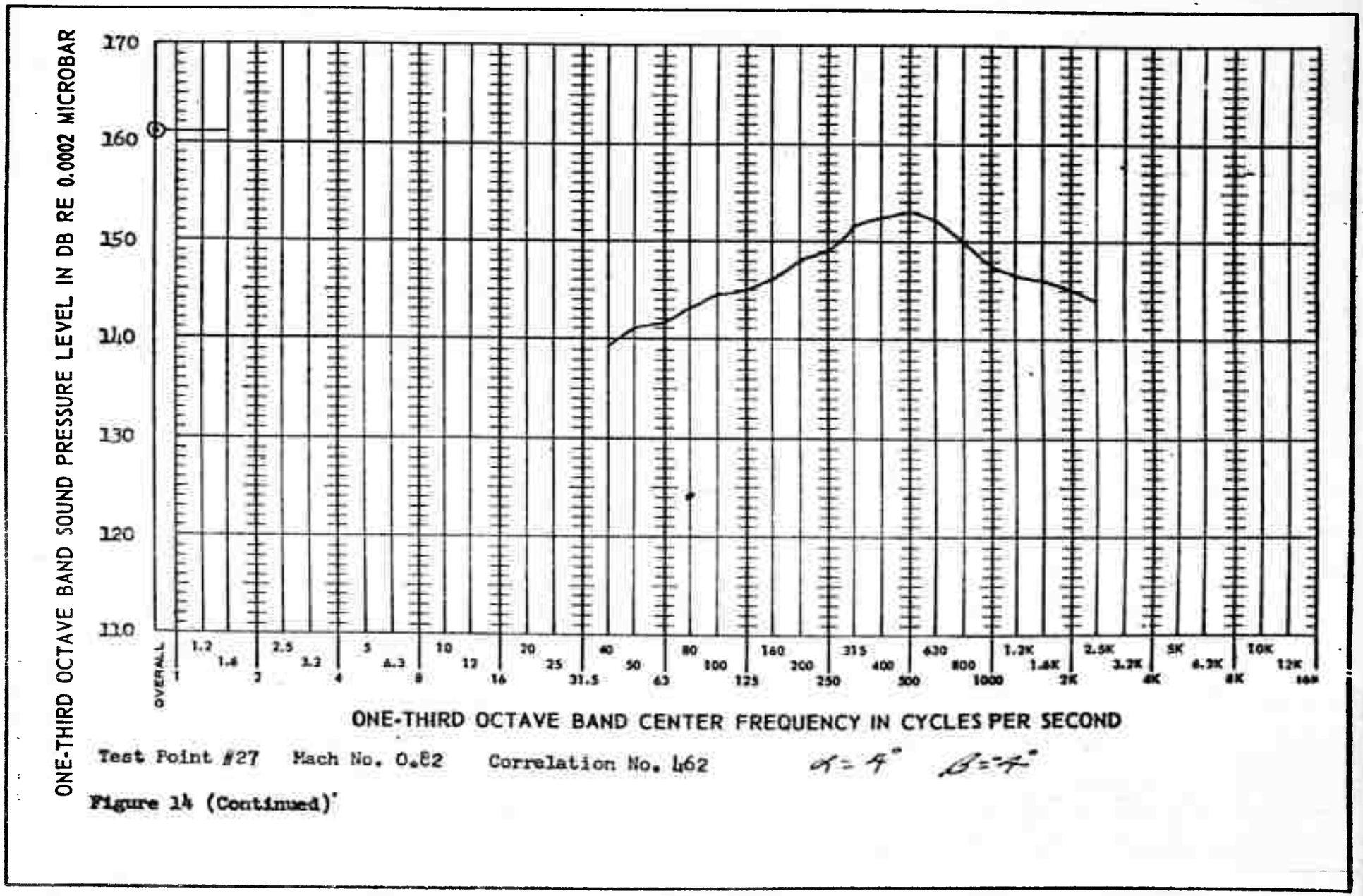
Test Point #27 Mach No. 0.8 Correlation No. 160 $\alpha = 2^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



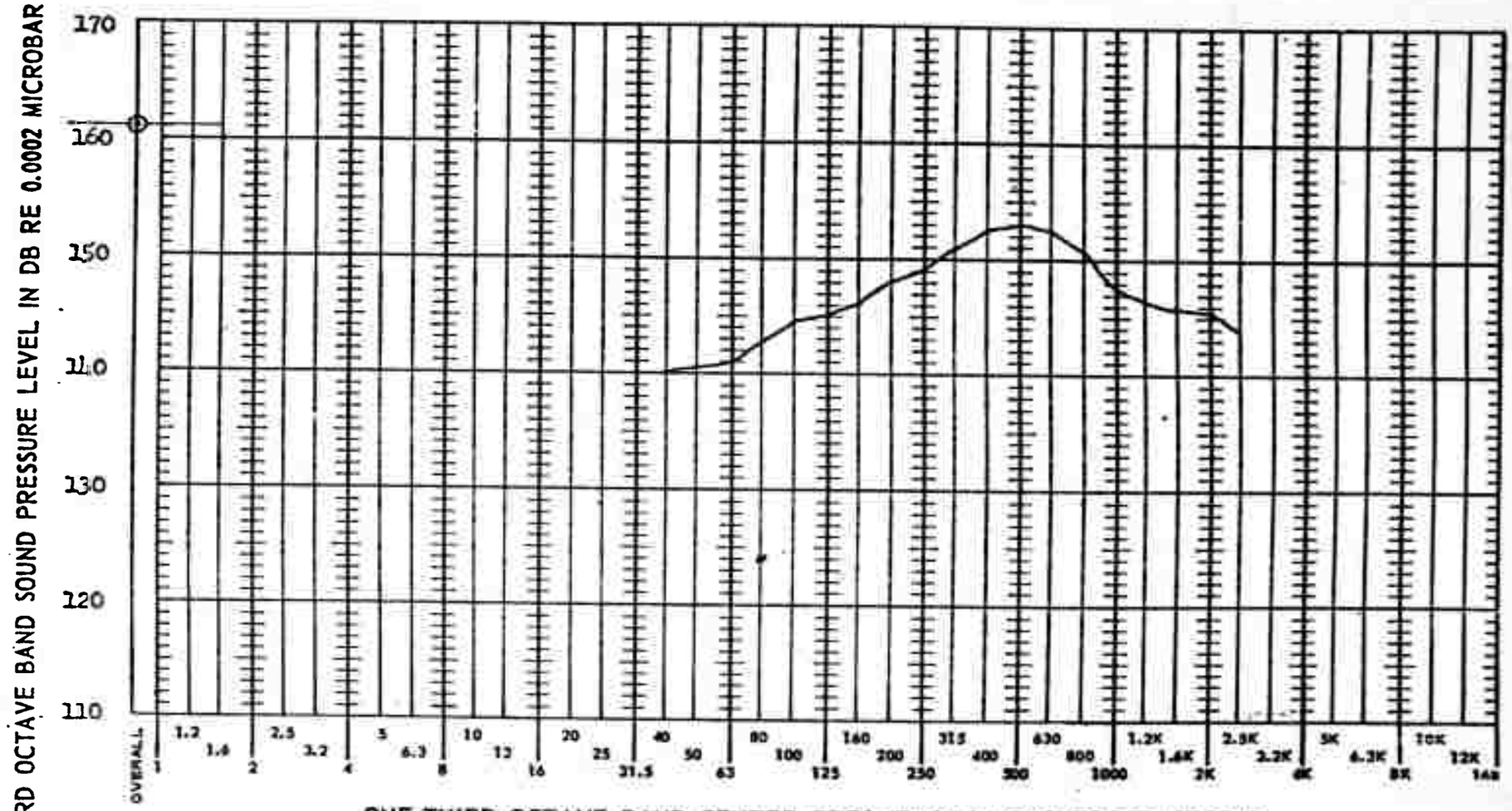
Test Point #27 Mach No. 0.8 Correlation No. 461 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



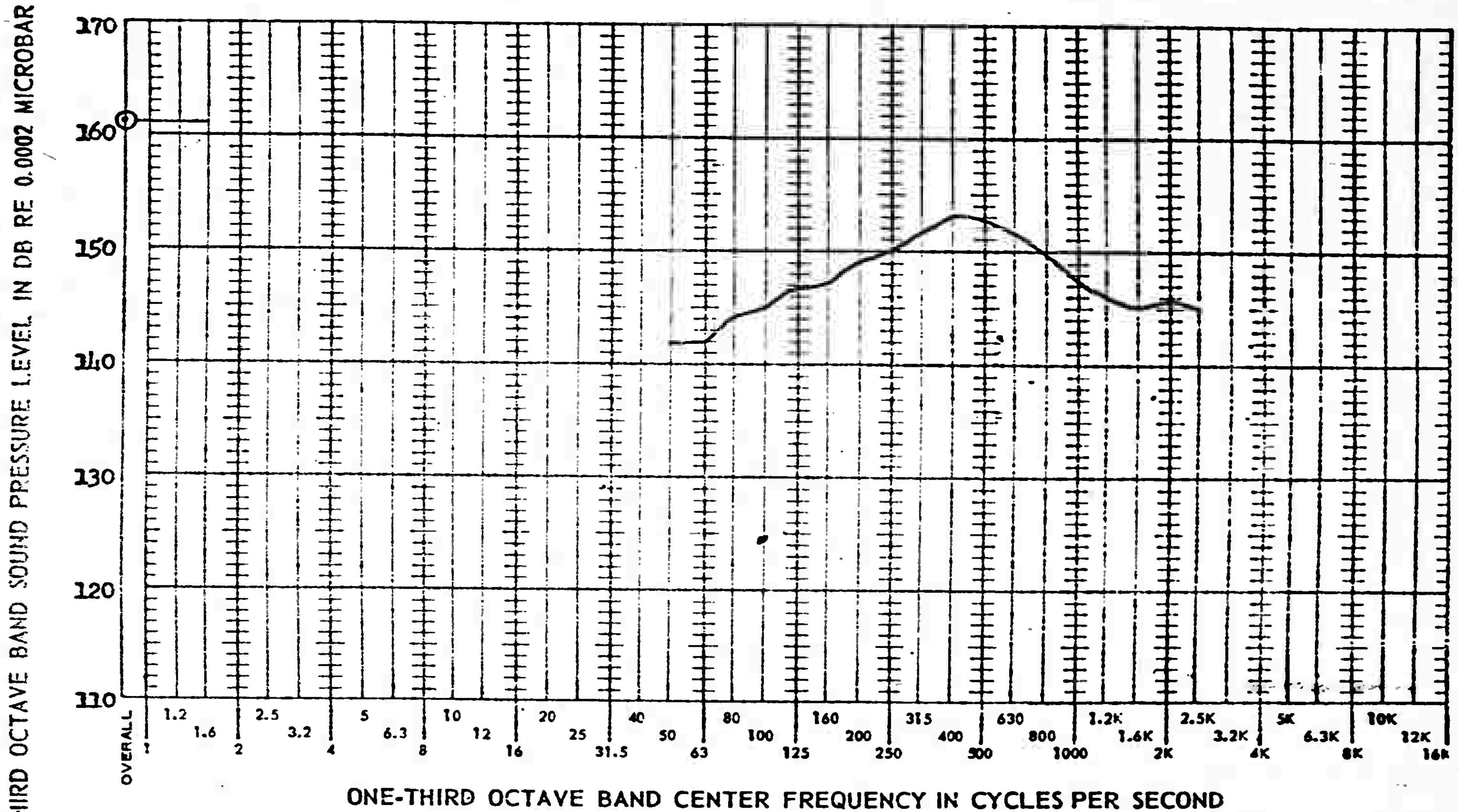
Test Point #27 Mach No. 0.82 Correlation No. 462 $\alpha = 4°$ $\beta = 4°$

Figure 14 (Continued)



Test Point #27 Mach No. 0.82 Correlation No. 463 $\alpha = 0°$ $\beta = 7°$

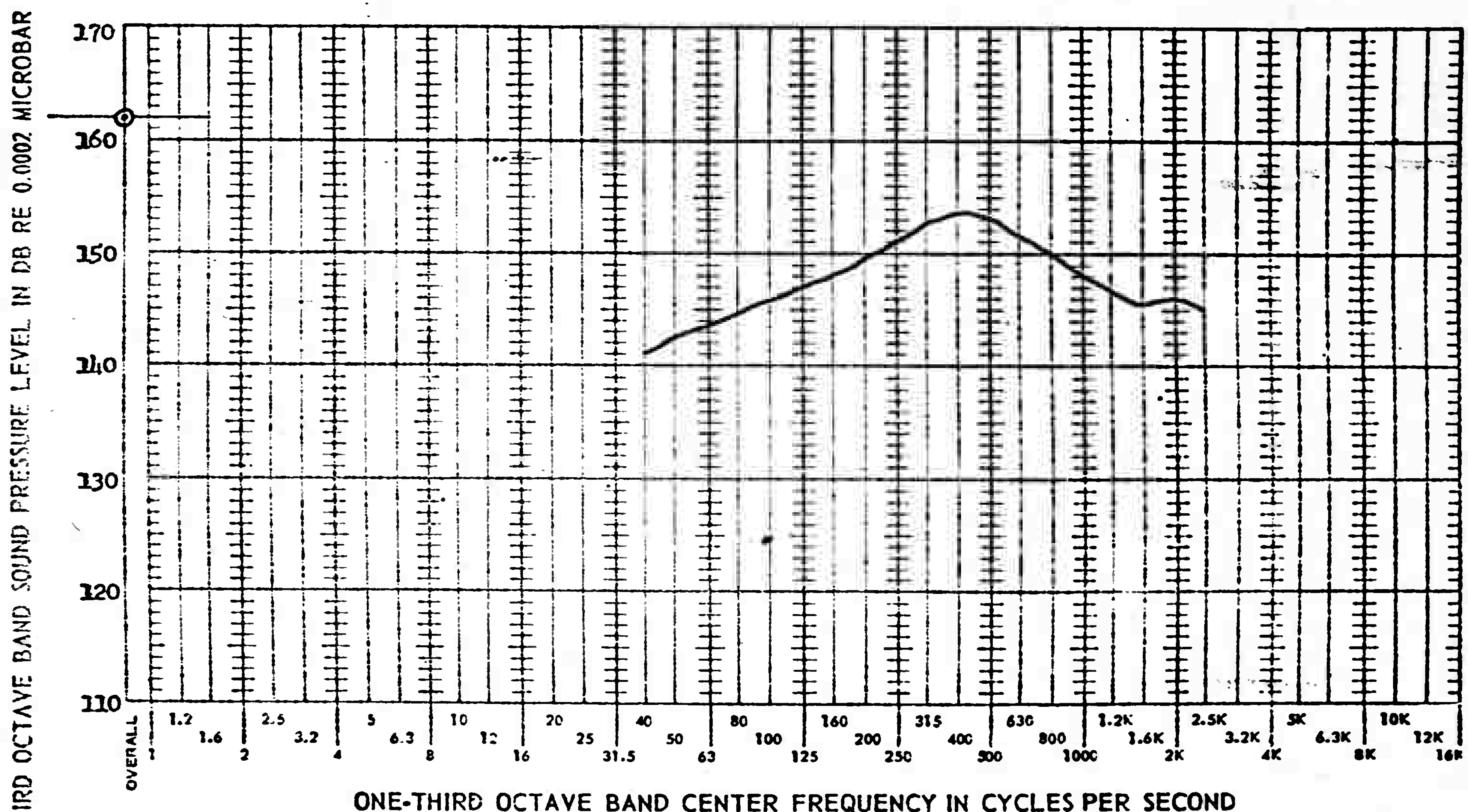
Figure 14 (Continued)



Test Point #27 Mach No. 0.82 Correlation No. 464 $\alpha = 4°$ $\beta = -4°$

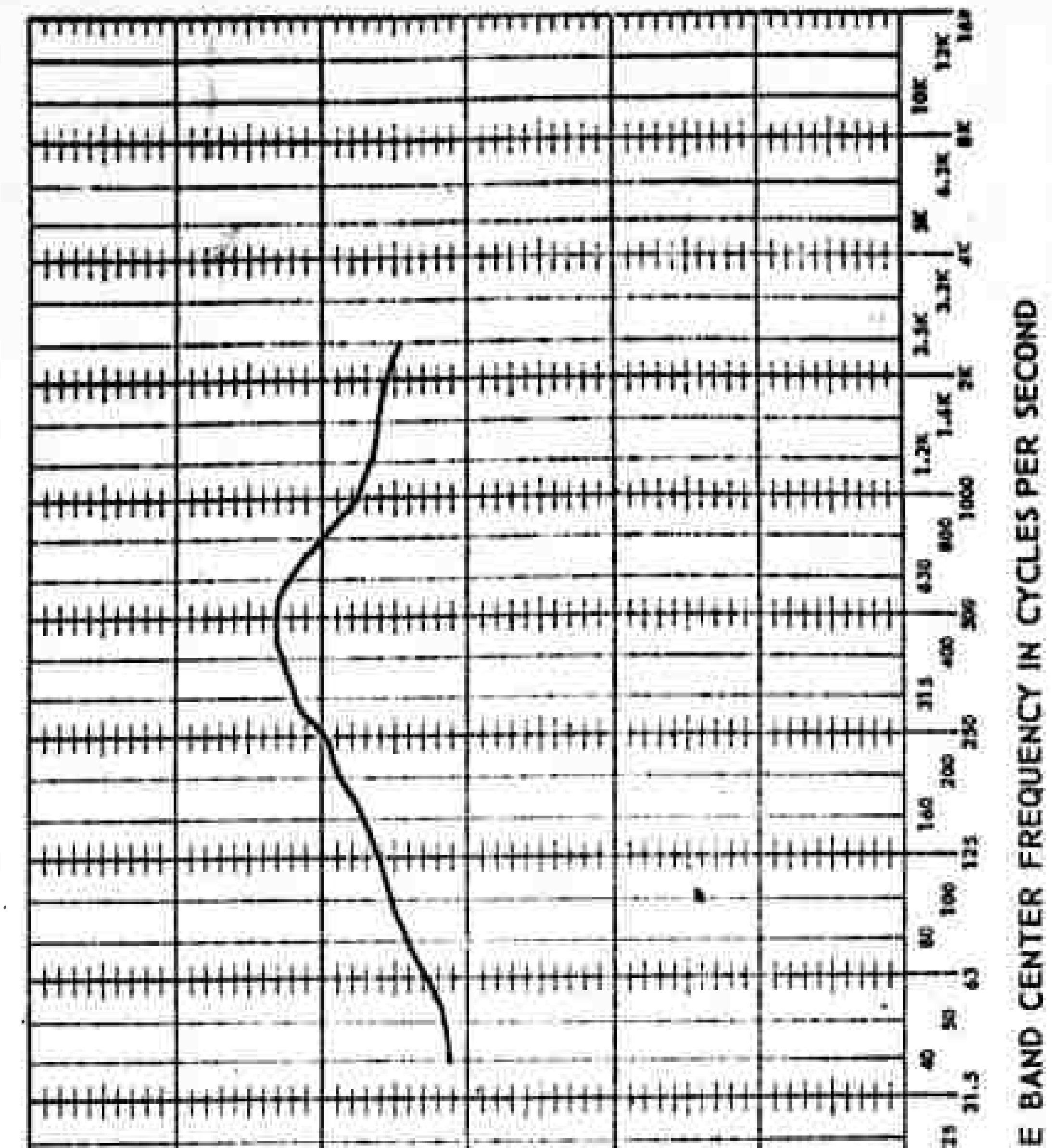
Figure 14 (Continued)

137



Test Point #27 Mach No. 0.84 Correlation No. 465 $\alpha = 4°$ $\beta = -4°$

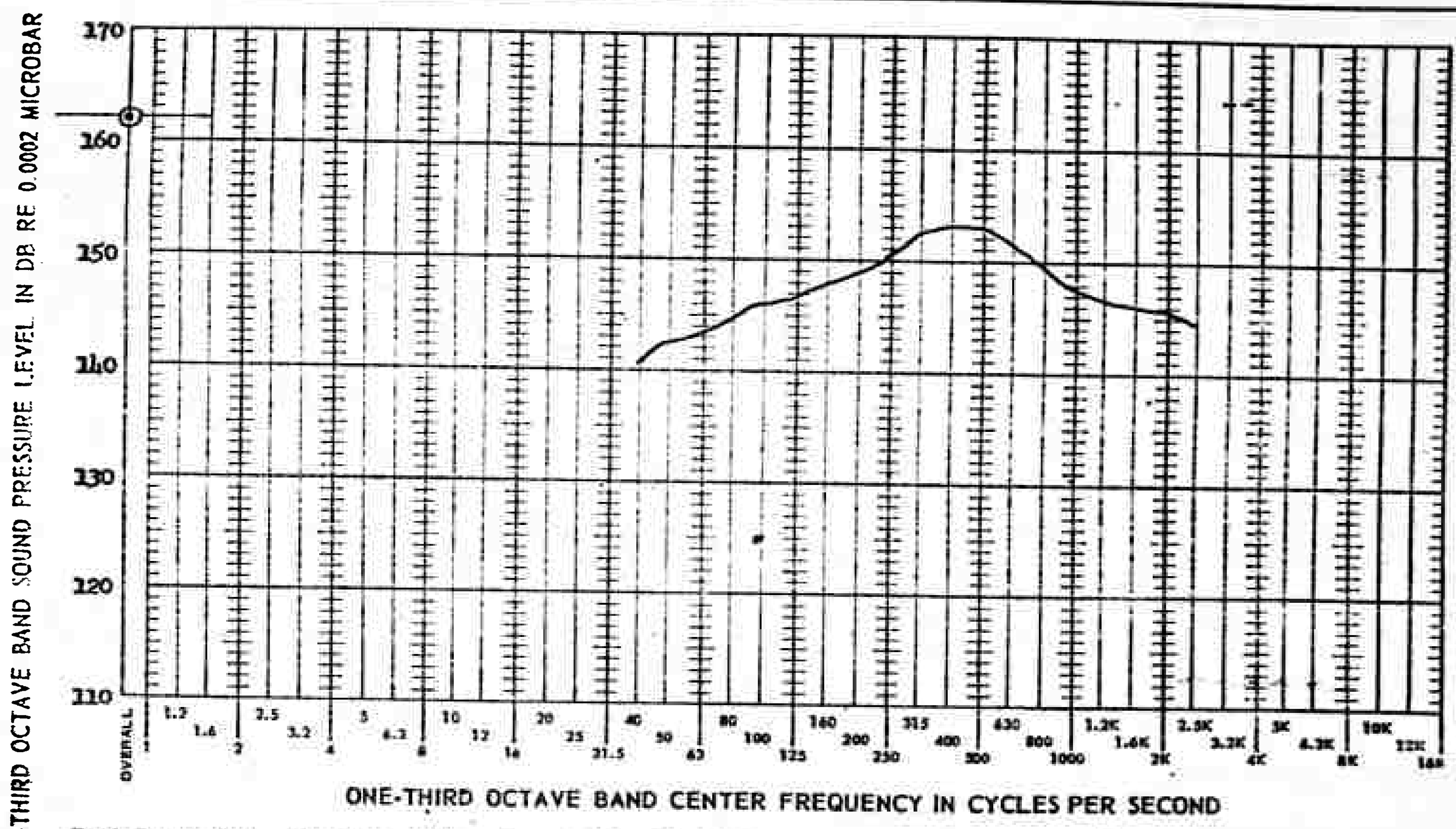
Figure 14 (Continued)



Test Point #27 Mach No. 0.84 Correlation No. 166 α = 0° β = 4°

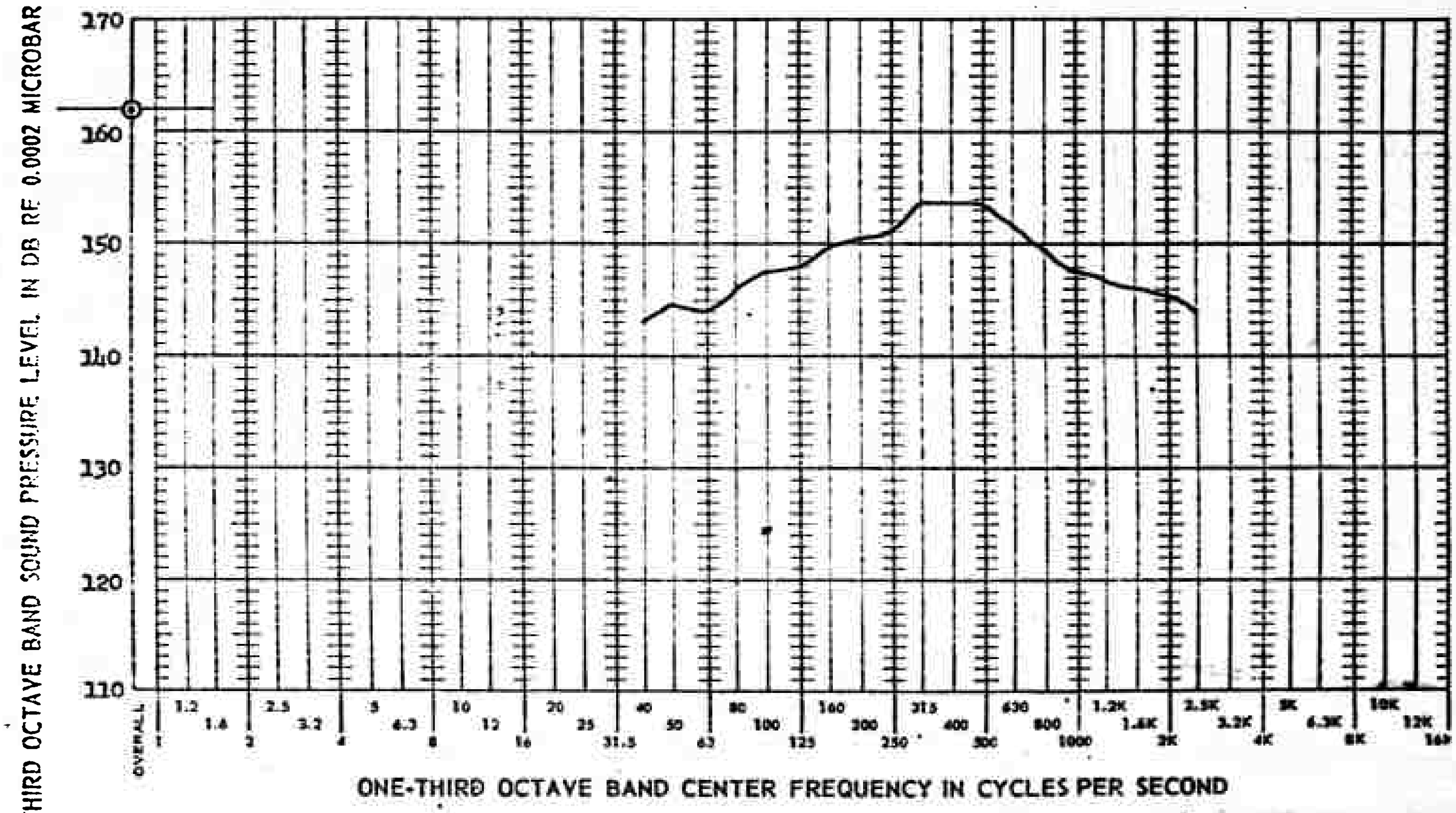
Figure 14 (Continued)

139



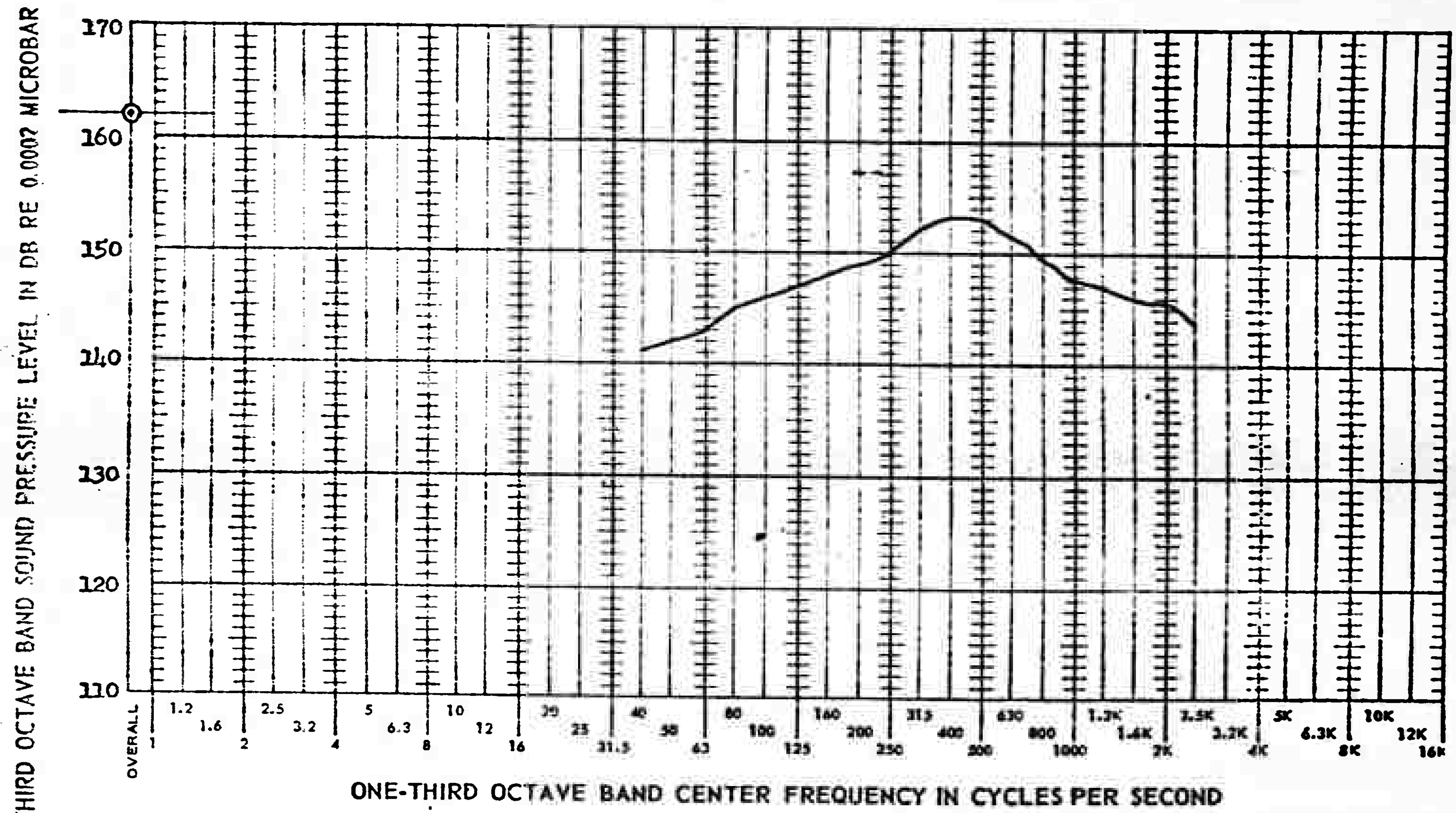
Test Point #27   Mach No. 0.84   Correlation No. 467   α = 4° β = -4°

Figure 14 (Continued)



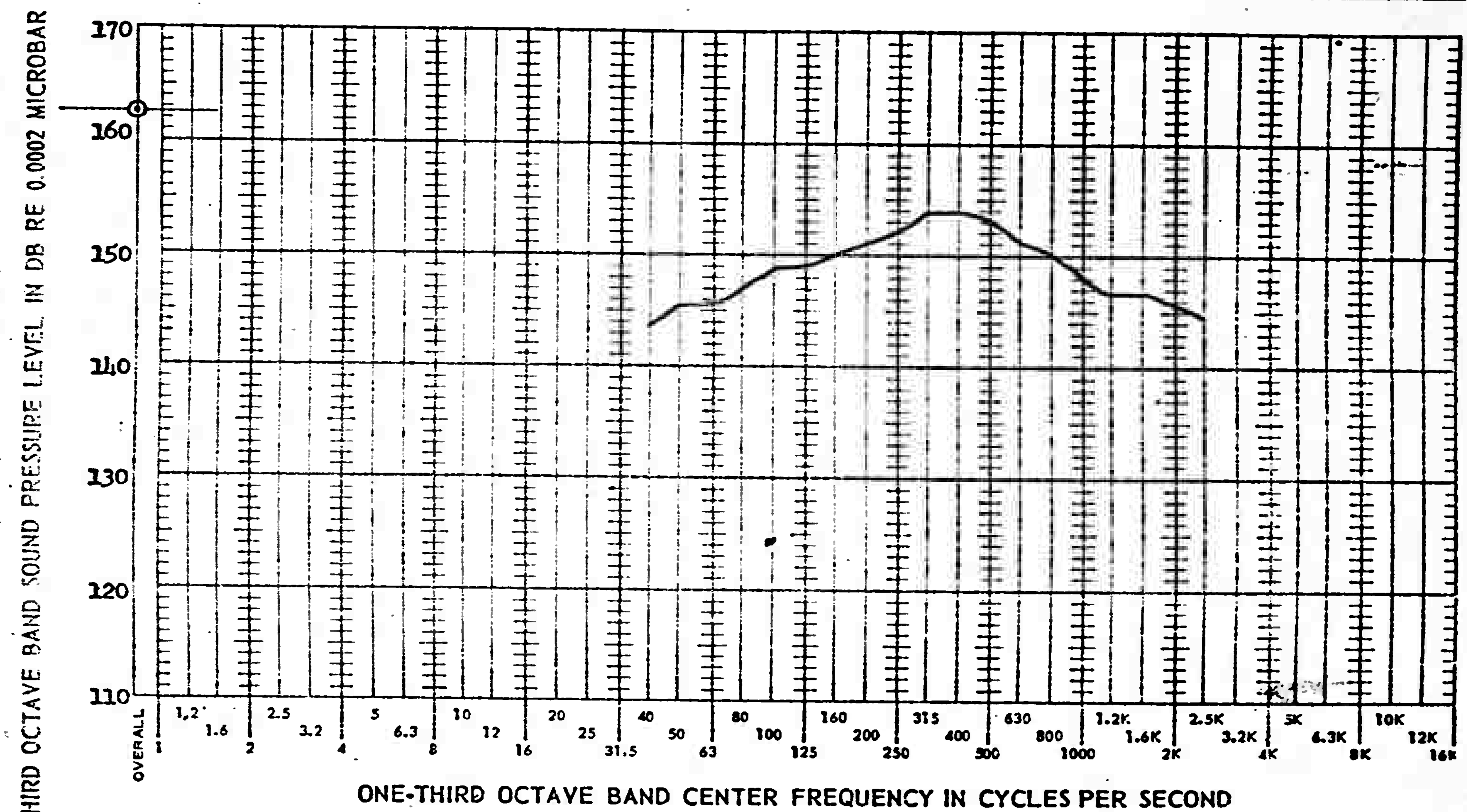
Test Point #27 Mach No. 0.86 Correlation No. 468 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



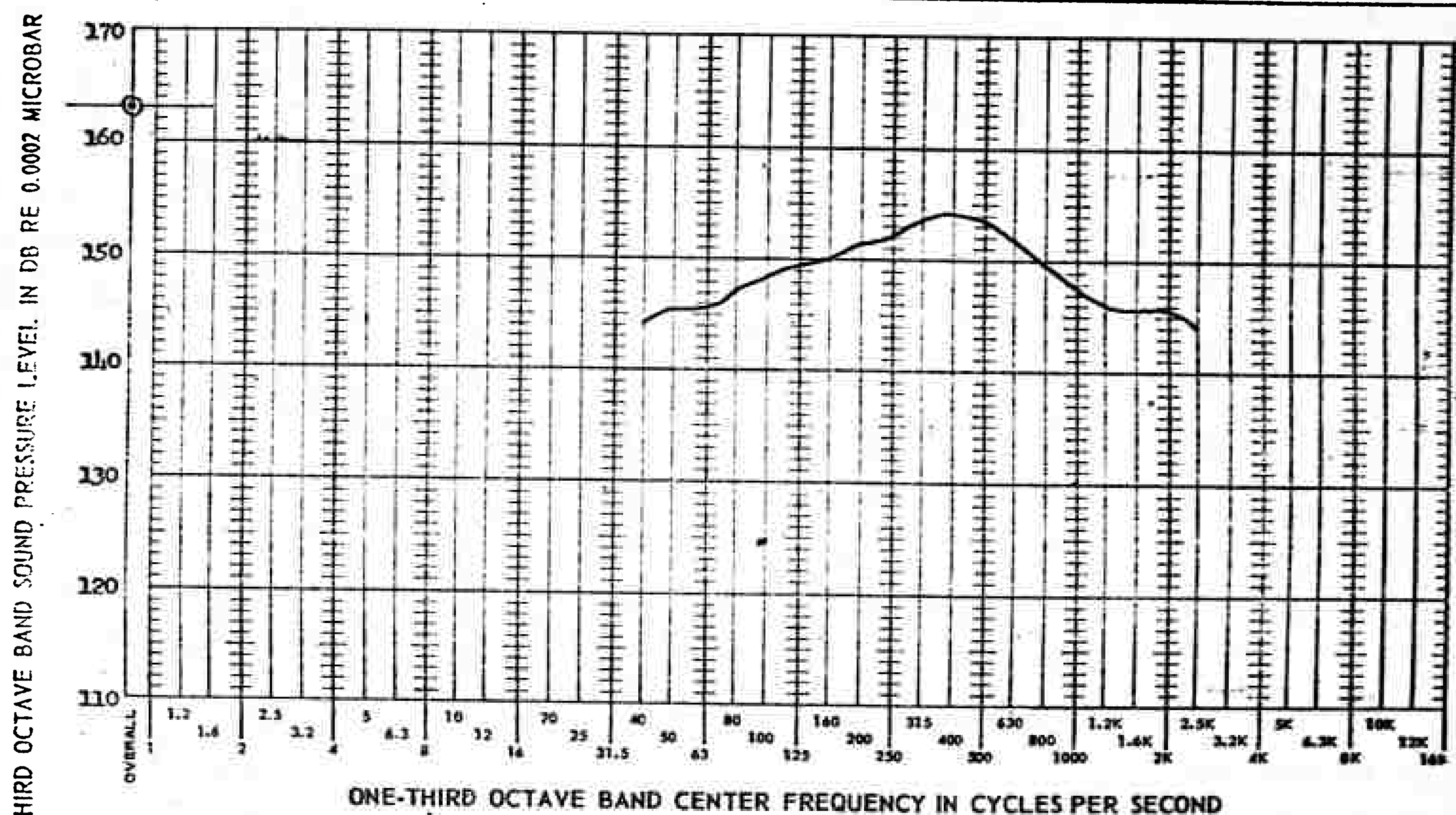
Test Point #27 Mach No. 0.86 Correlation No. 469 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



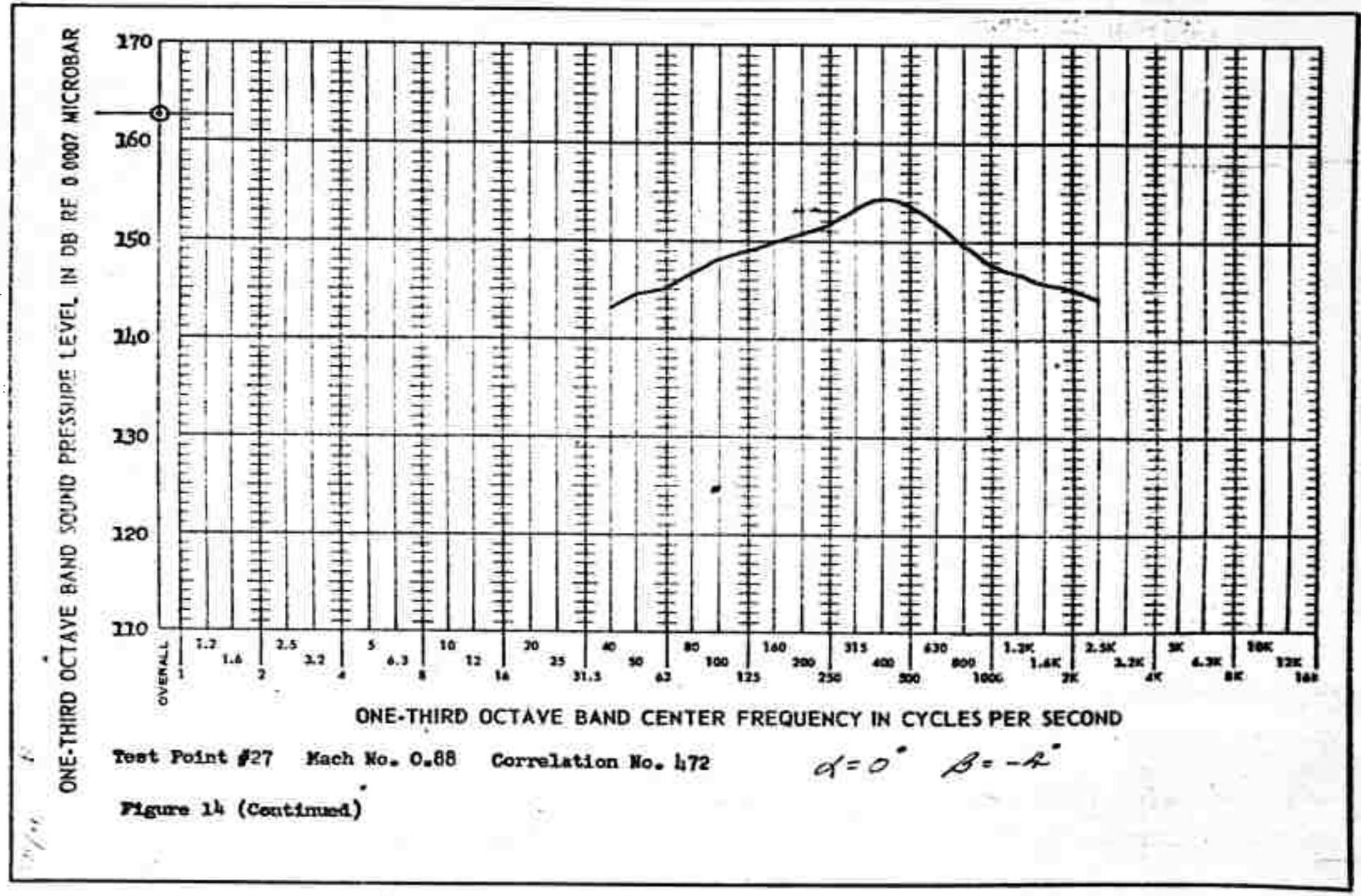
Test Point #27 Mach No. 0.86 Correlation No. 470 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



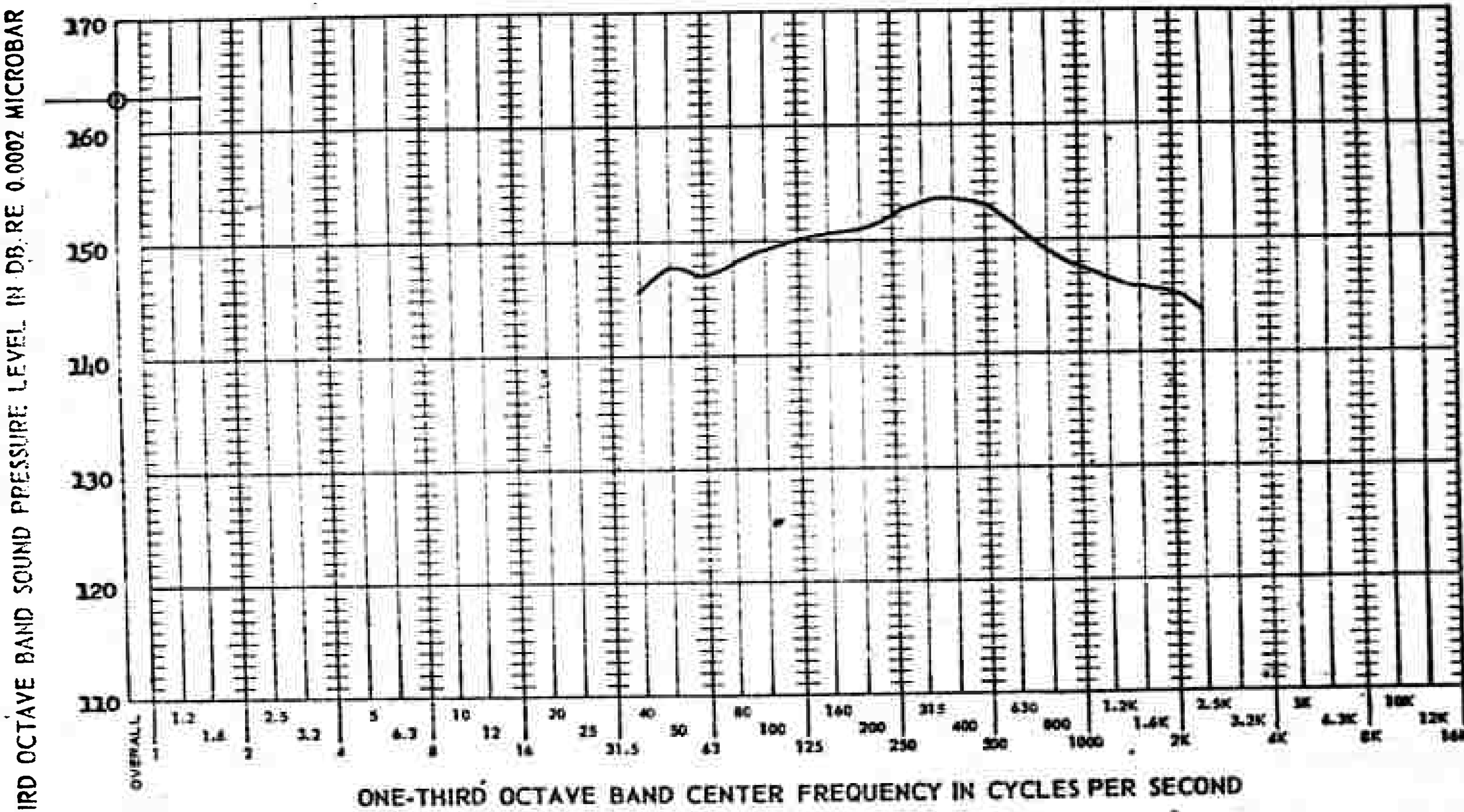
Test Point #27 Mach No. 0.88 Correlation No. 471 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



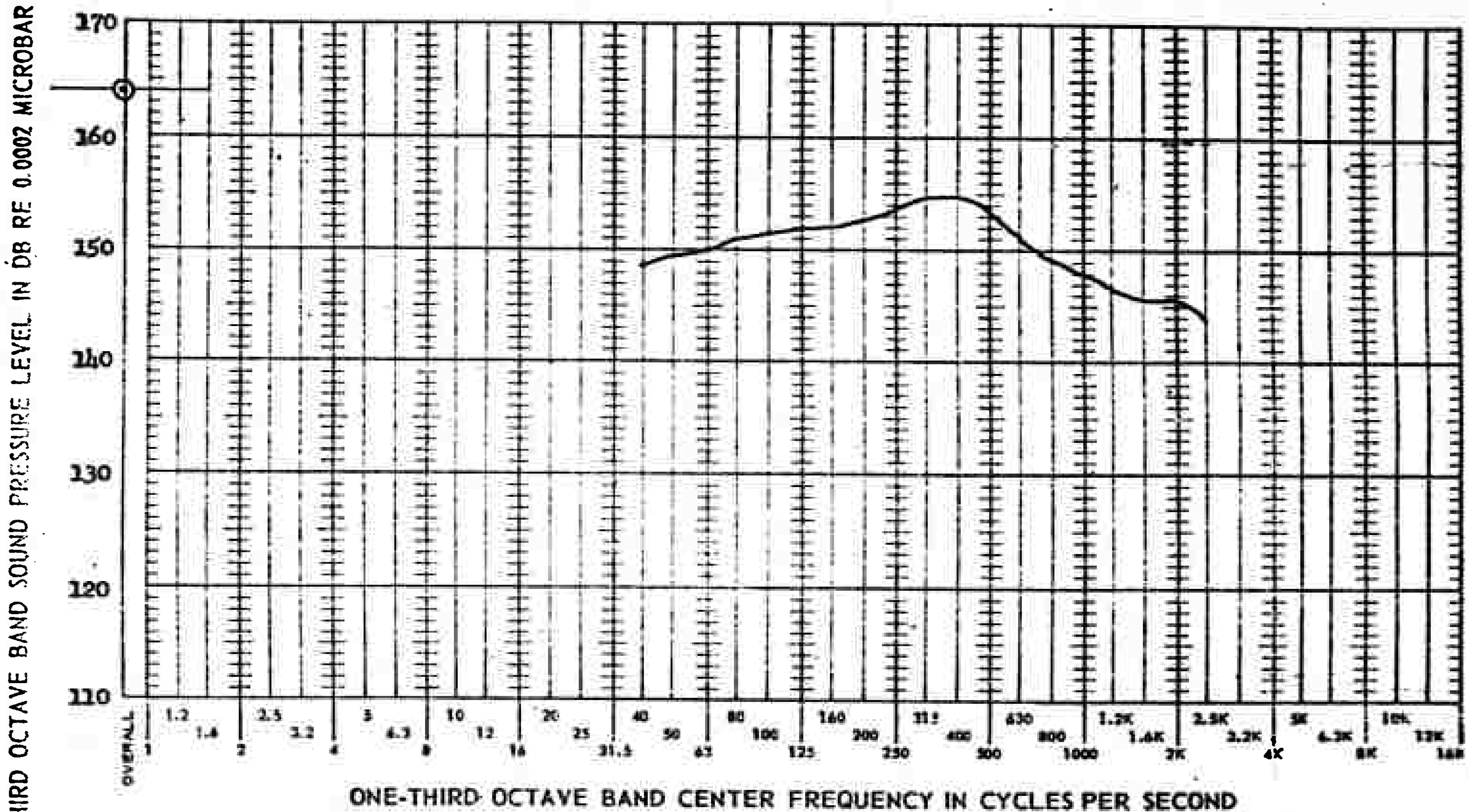
Test Point #27 Mach No. 0.88 Correlation No. 472 $\alpha = 0^\circ$ $\beta = -2^\circ$

Figure 14 (Continued)



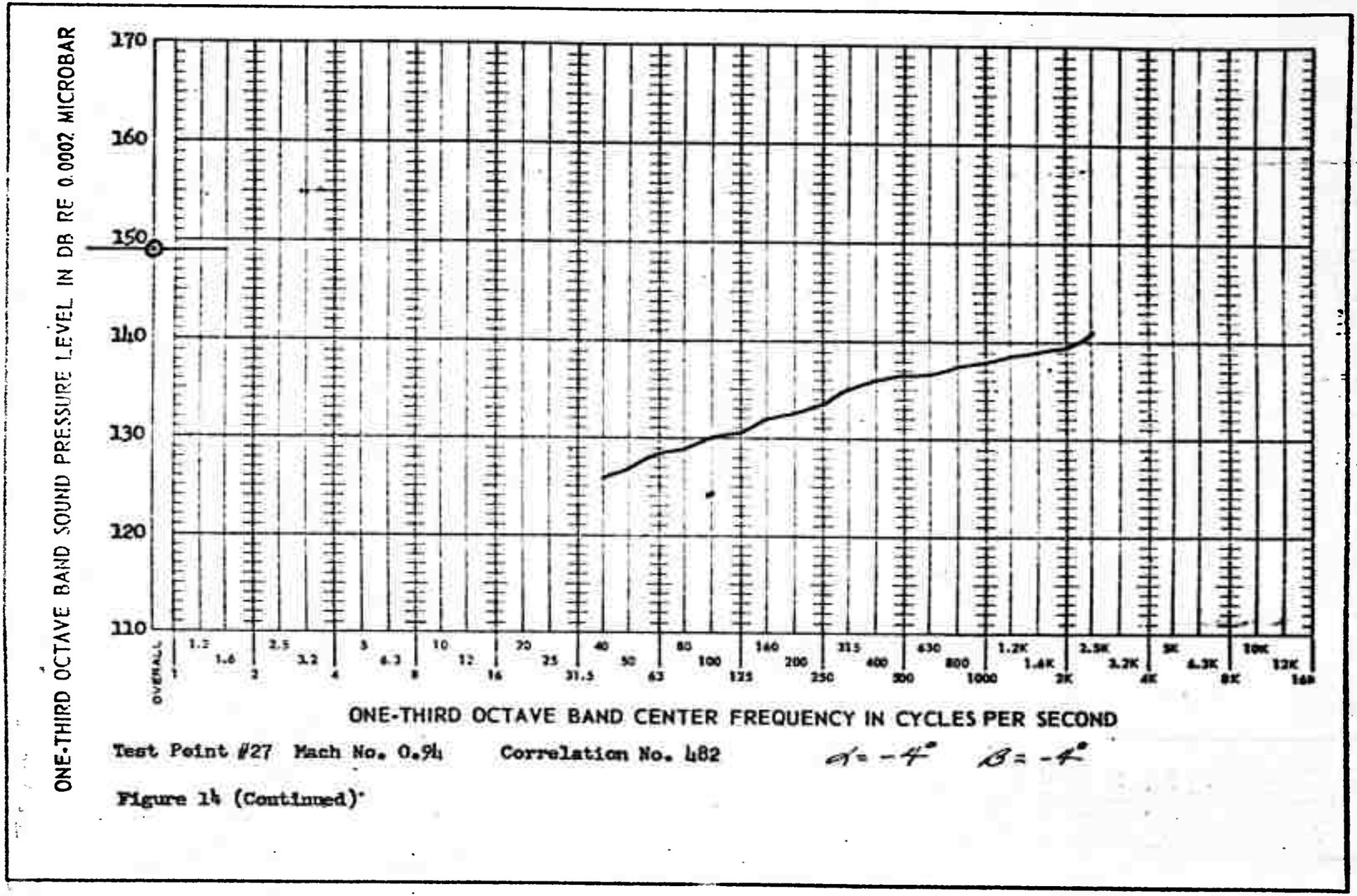
Test Point #27 Mach No. 0.88 Correlation No. 473 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



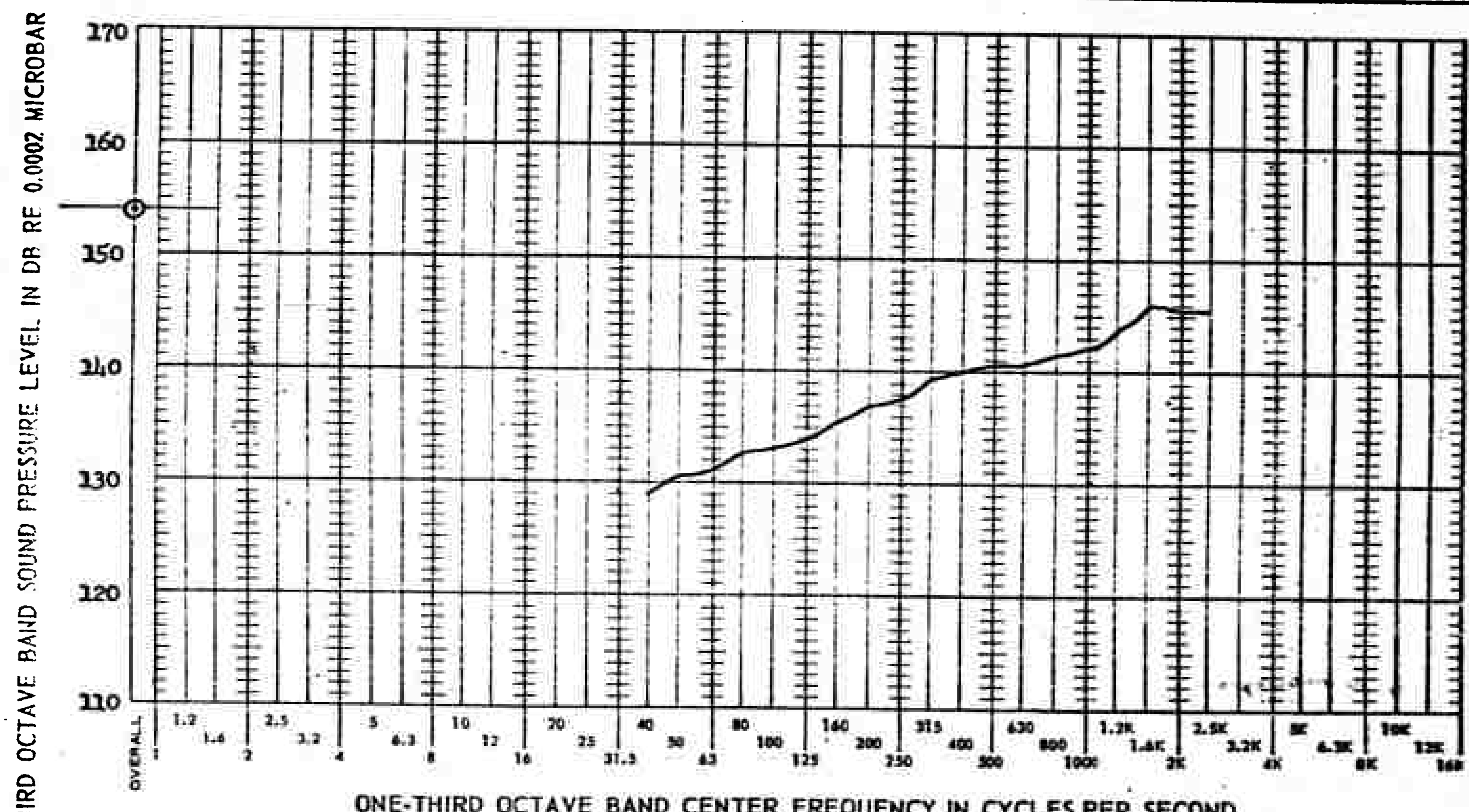
Test Point #27 Mach No. 0.9 Correlation No. 476 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



Test Point #27 Mach No. 0.94 Correlation No. 482 $\alpha = -4°$ $\beta = -4°$

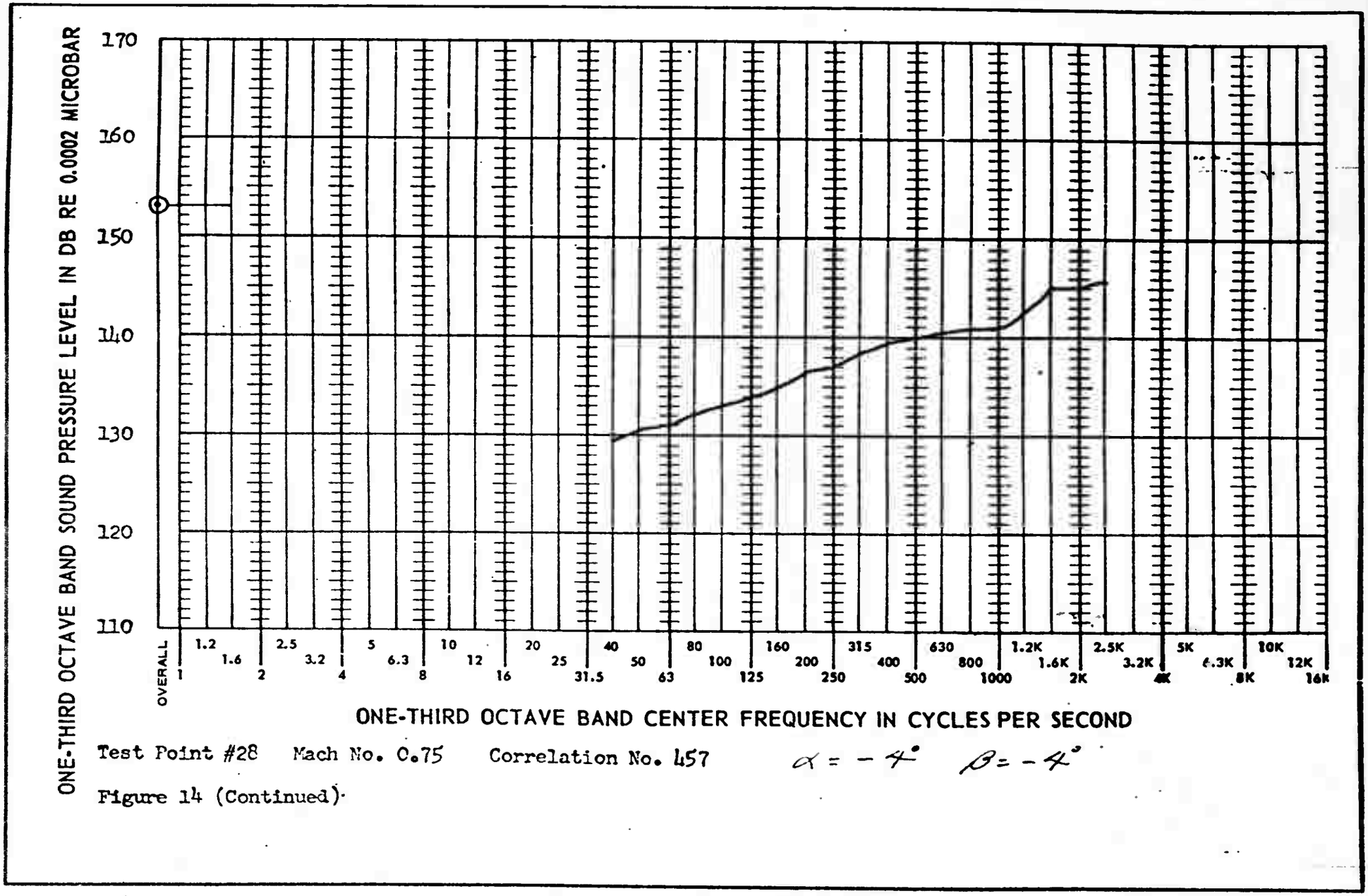
Figure 14 (Continued)



Test Point #28 Mach No. 0.75 Correlation No. 456 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)

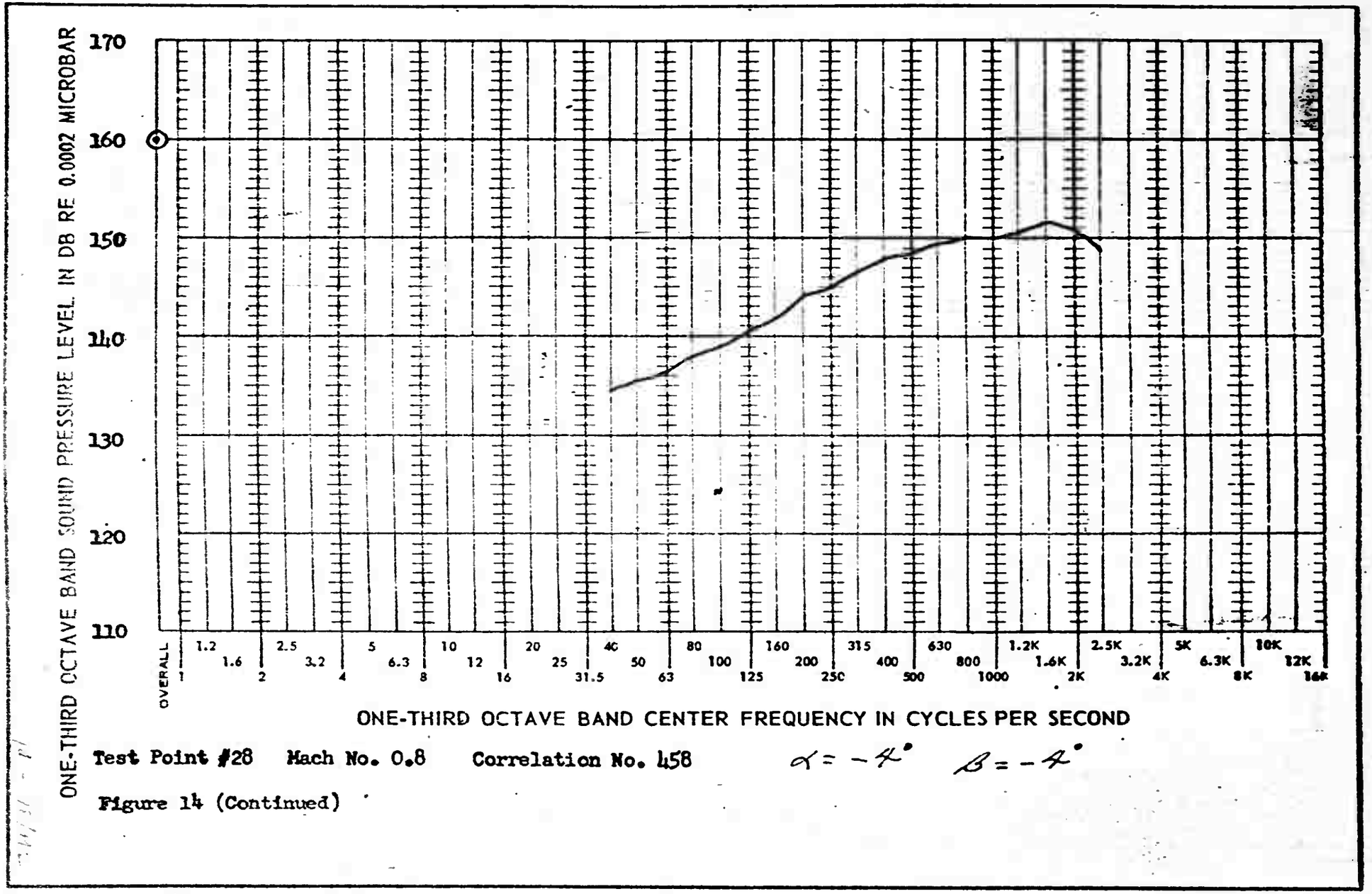
149



Test Point #28 Mach No. 0.75 Correlation No. 457 $\alpha = -4°$ $\beta = -4°$

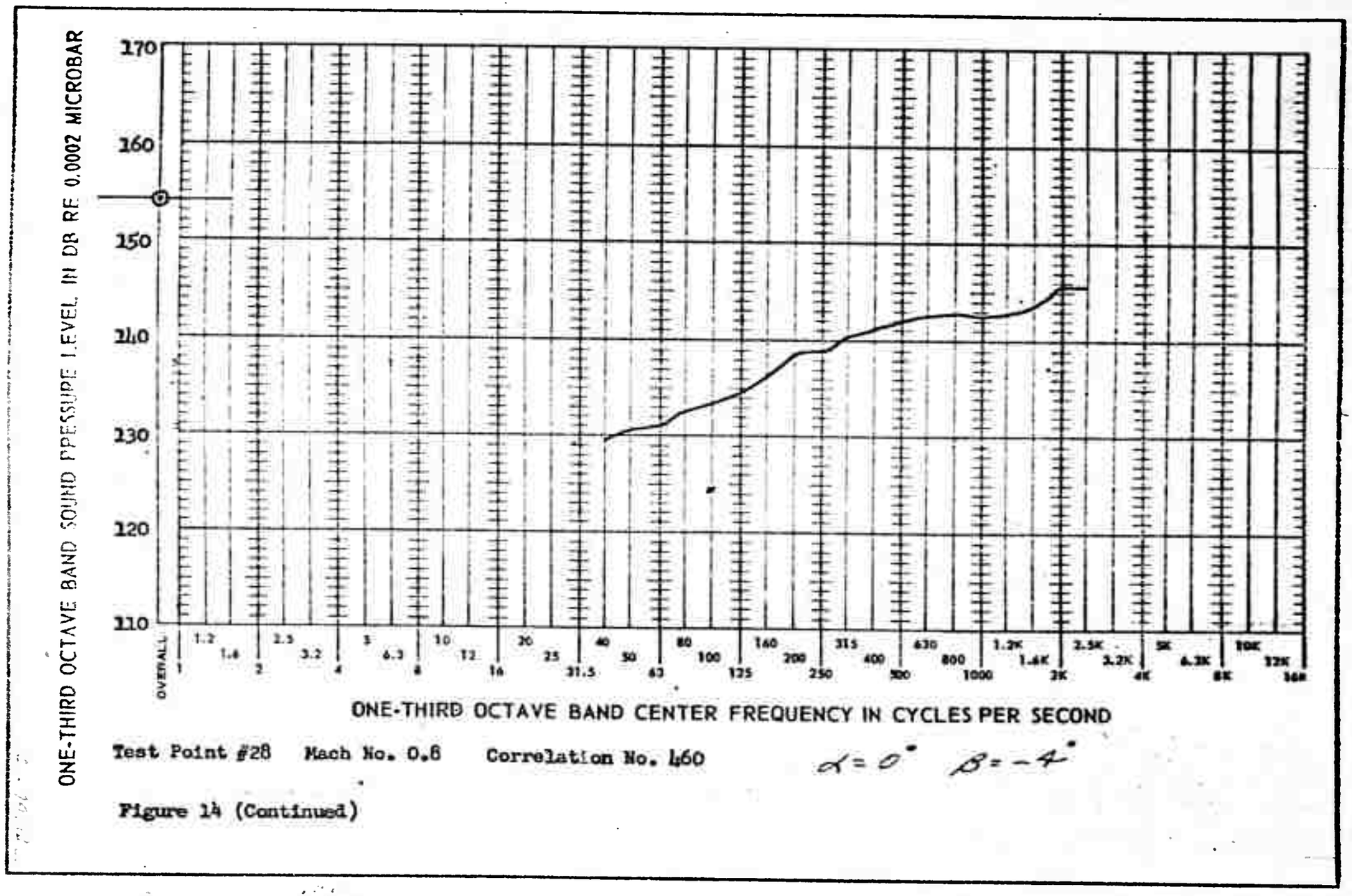
Figure 14 (Continued)

151



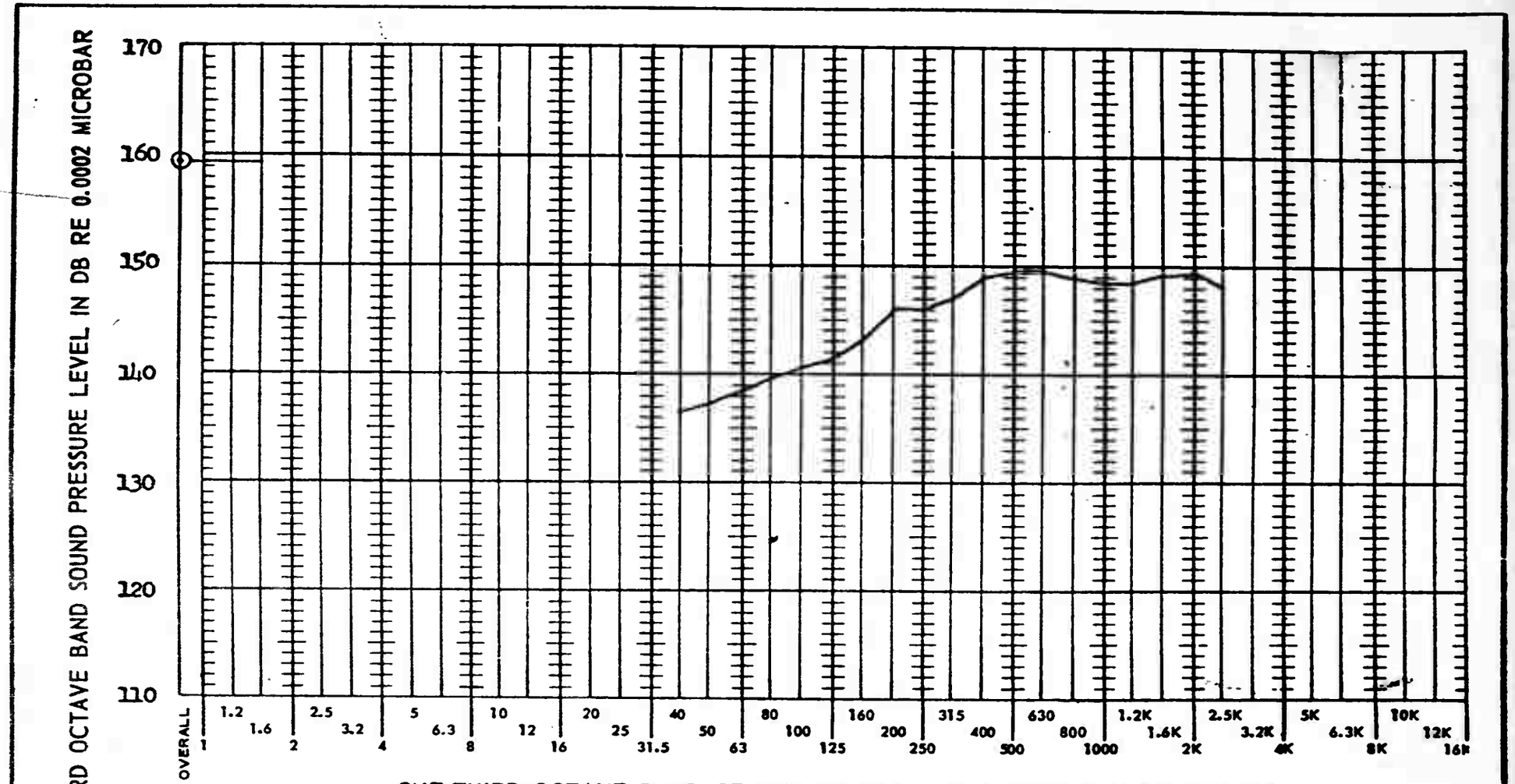
Test Point #28 Mach No. 0.8 Correlation No. 458 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



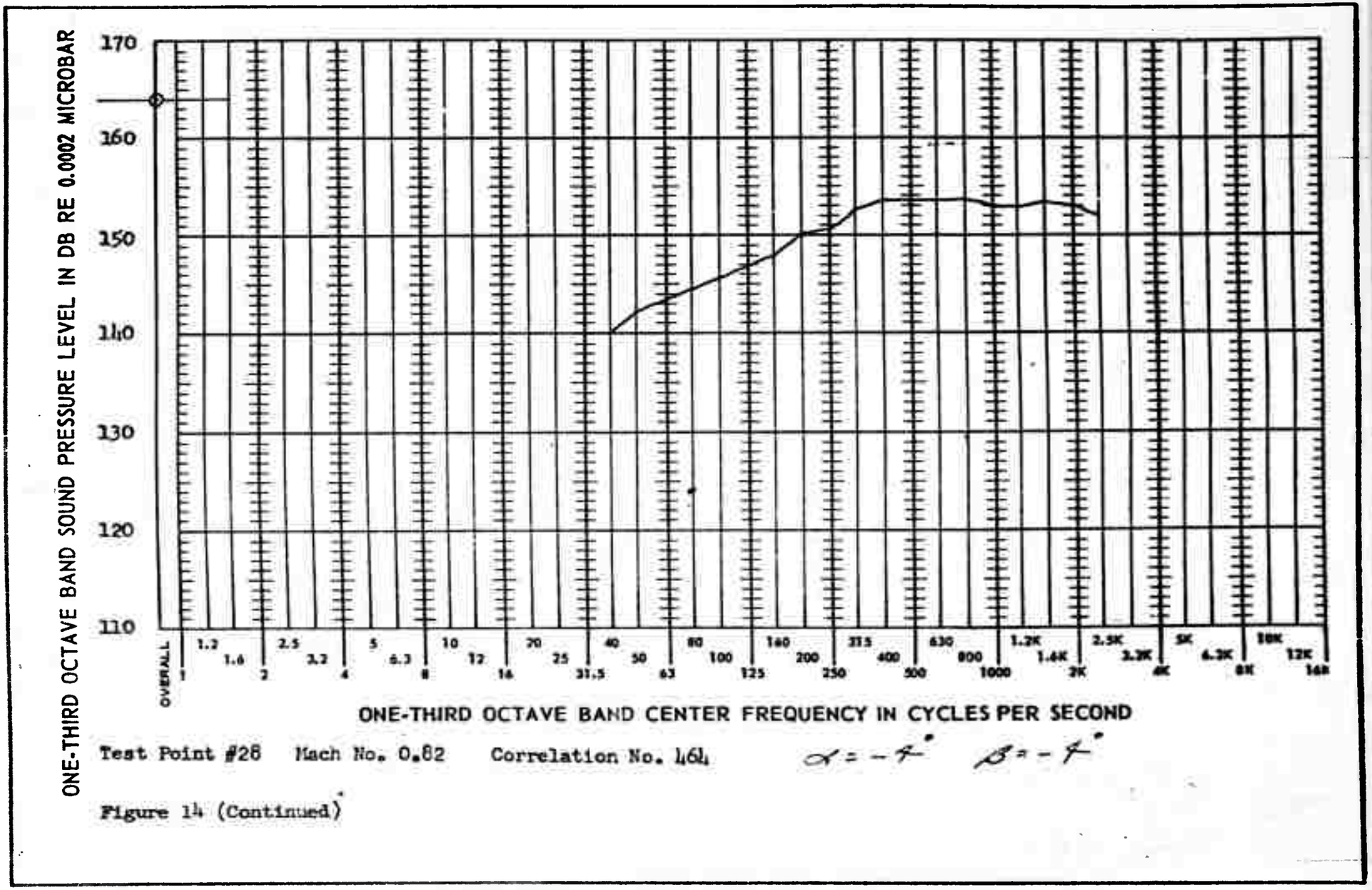
Test Point #28 Mach No. 0.6 Correlation No. 460 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



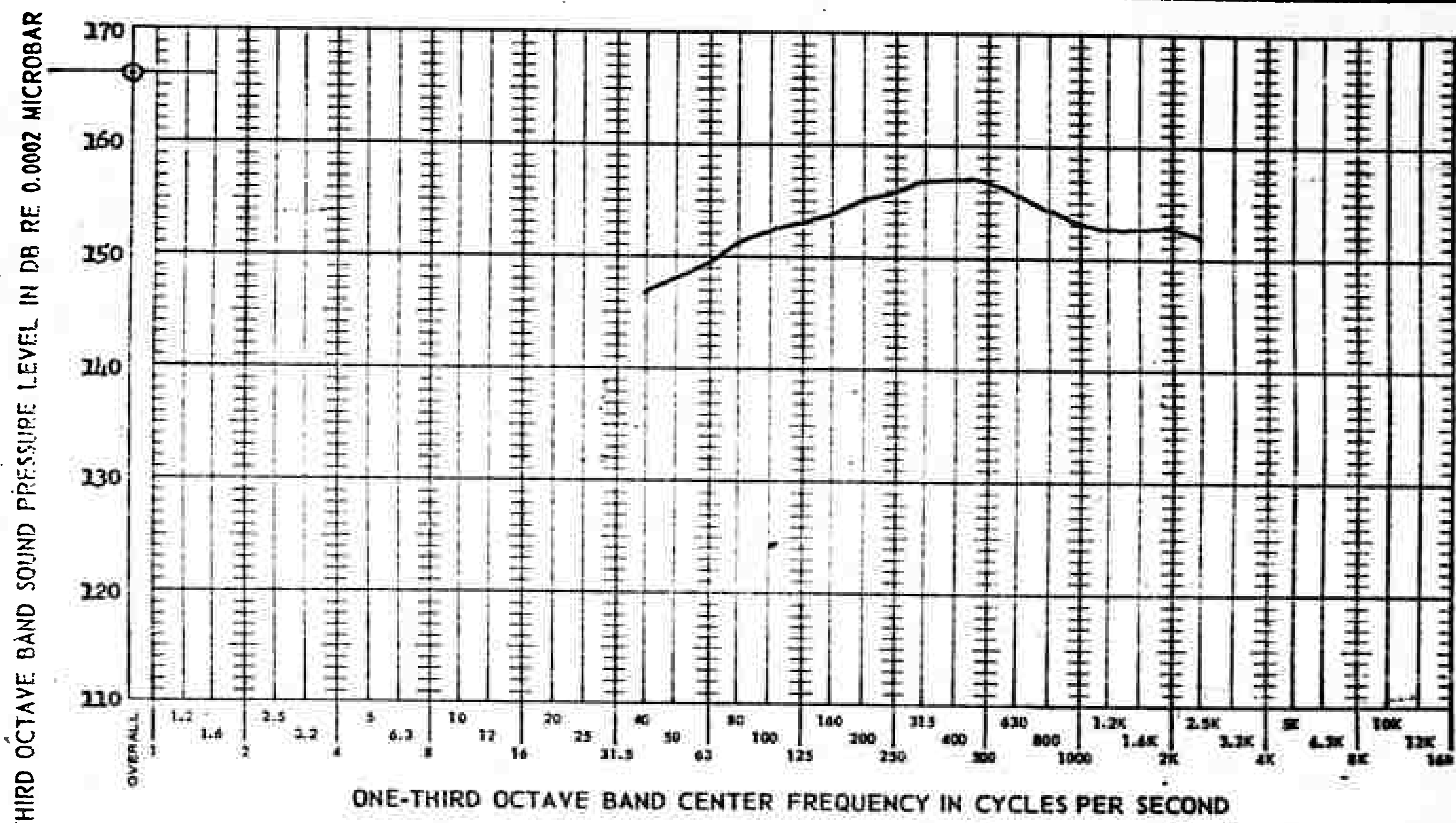
Test Point #28 Mach No. 0.82 Correlation No. 463 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



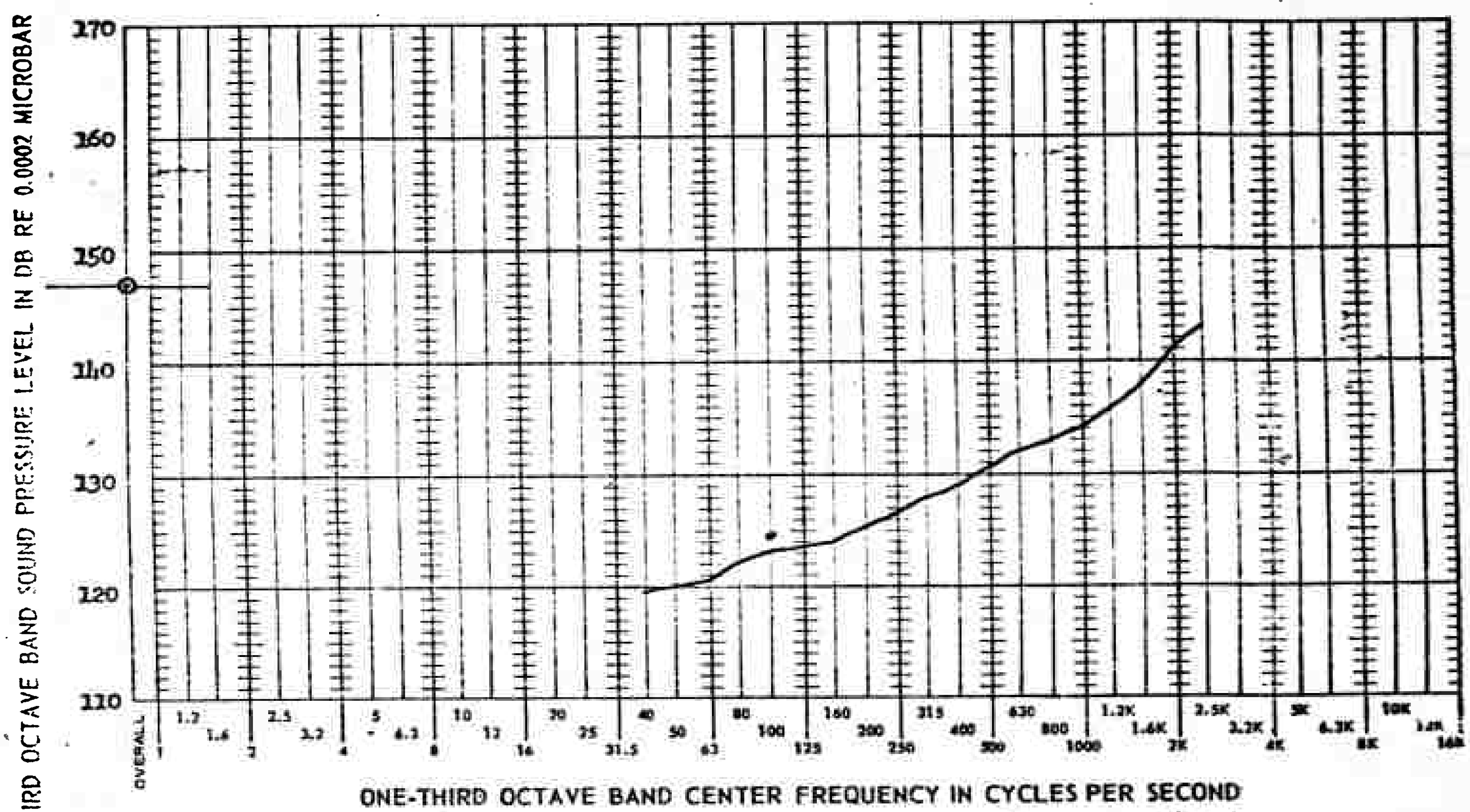
Test Point #28 Mach No. 0.82 Correlation No. 464 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



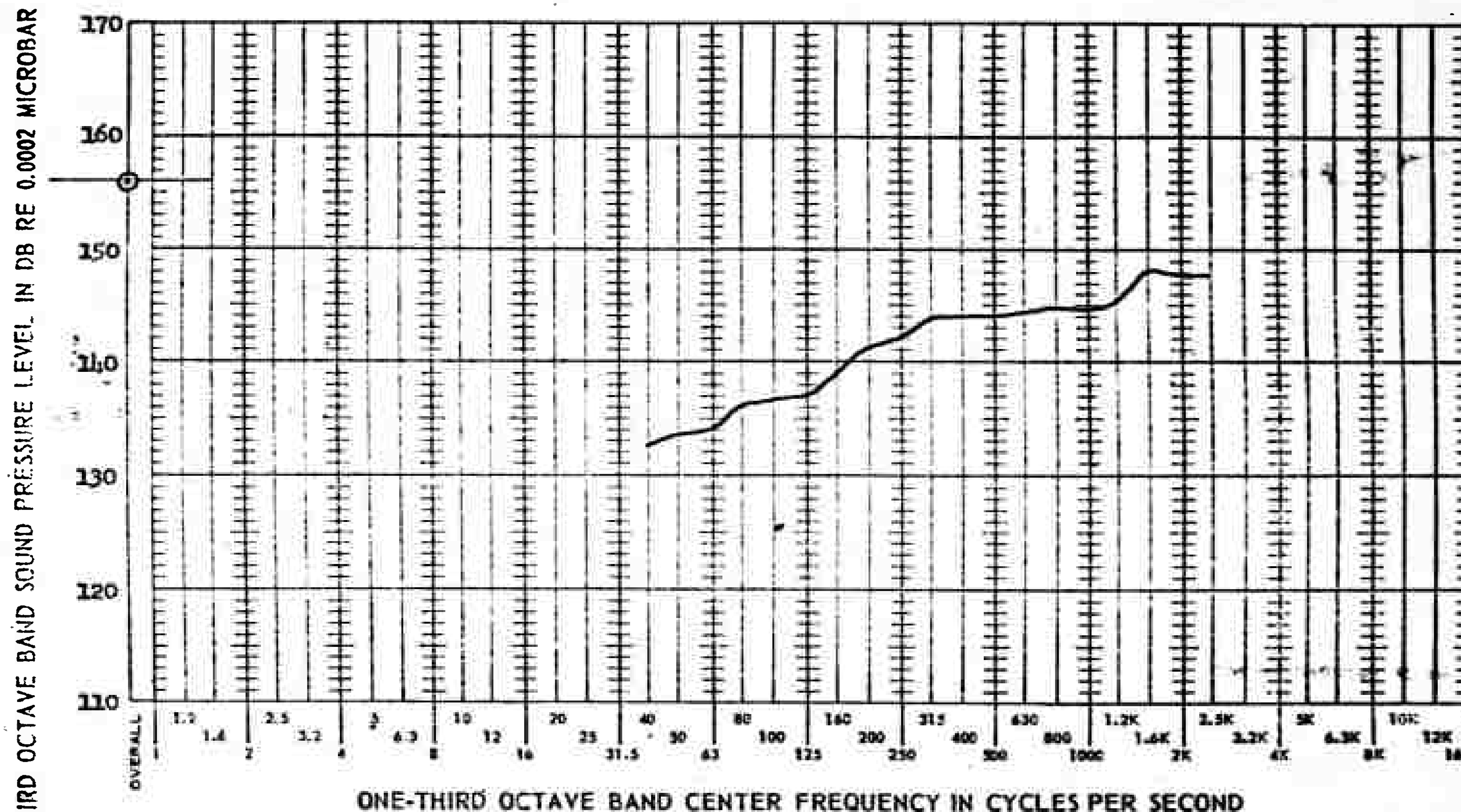
Test Point #28 Mach No. 0.84 Correlation No. 466 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



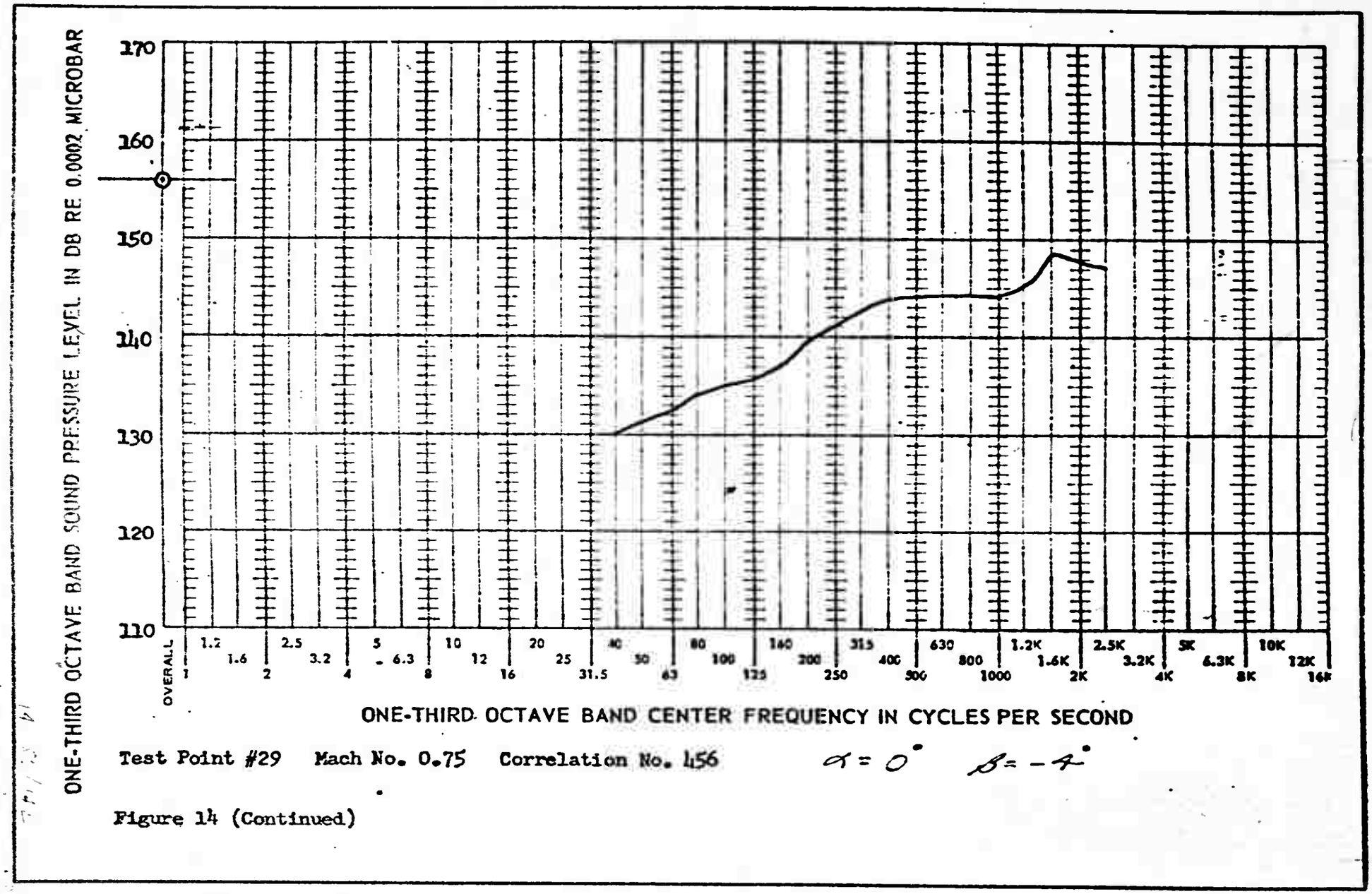
Test Point #28 Mach No. 0.92 Correlation No. 477 α = -4° β = -4°

Figure 14 (Continued)



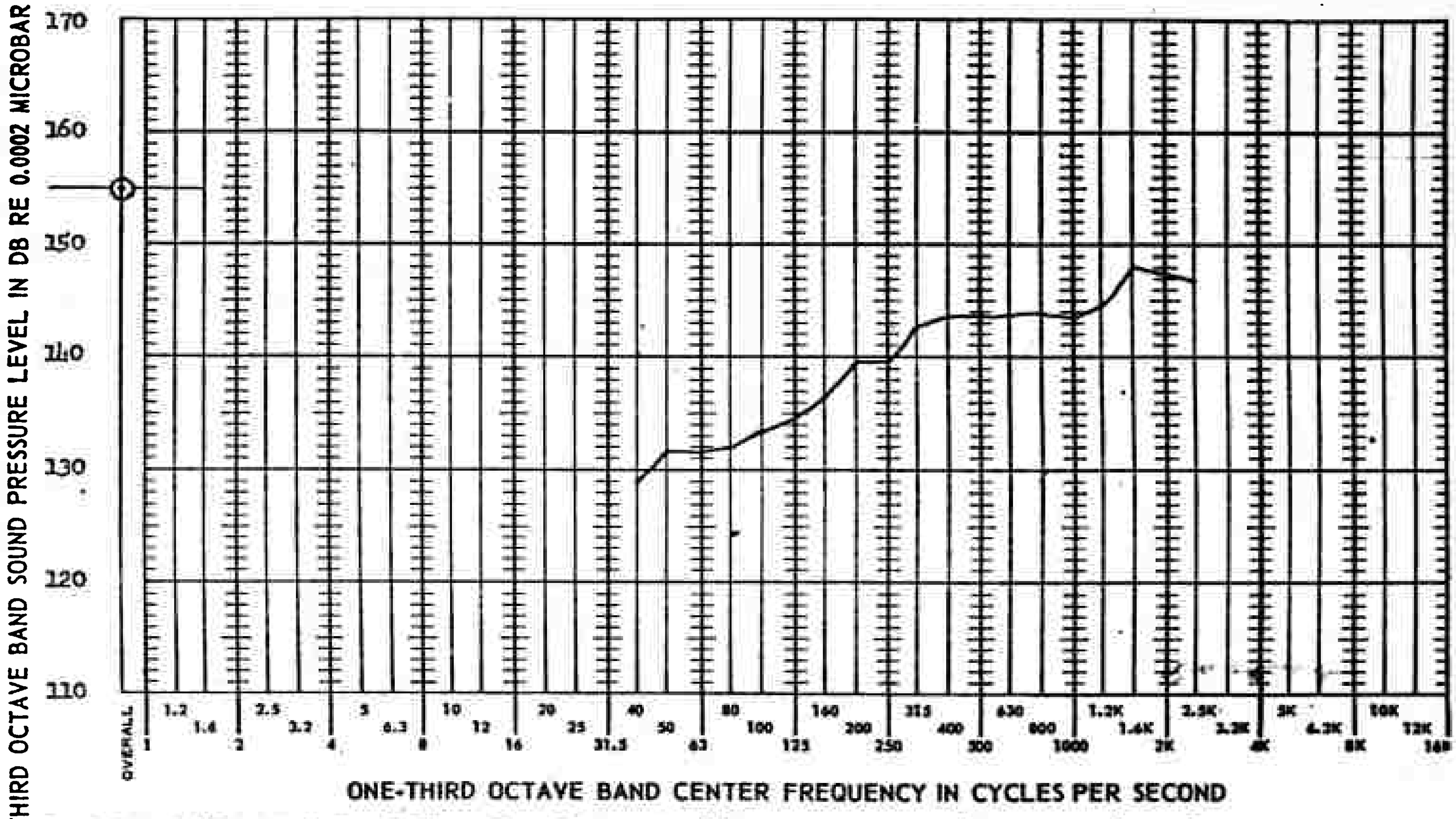
Test Point #29 Mach No. 0.75 Correlation No. 455 $\alpha = 4$ $\beta = -4°$

Figure 14 (Continued)



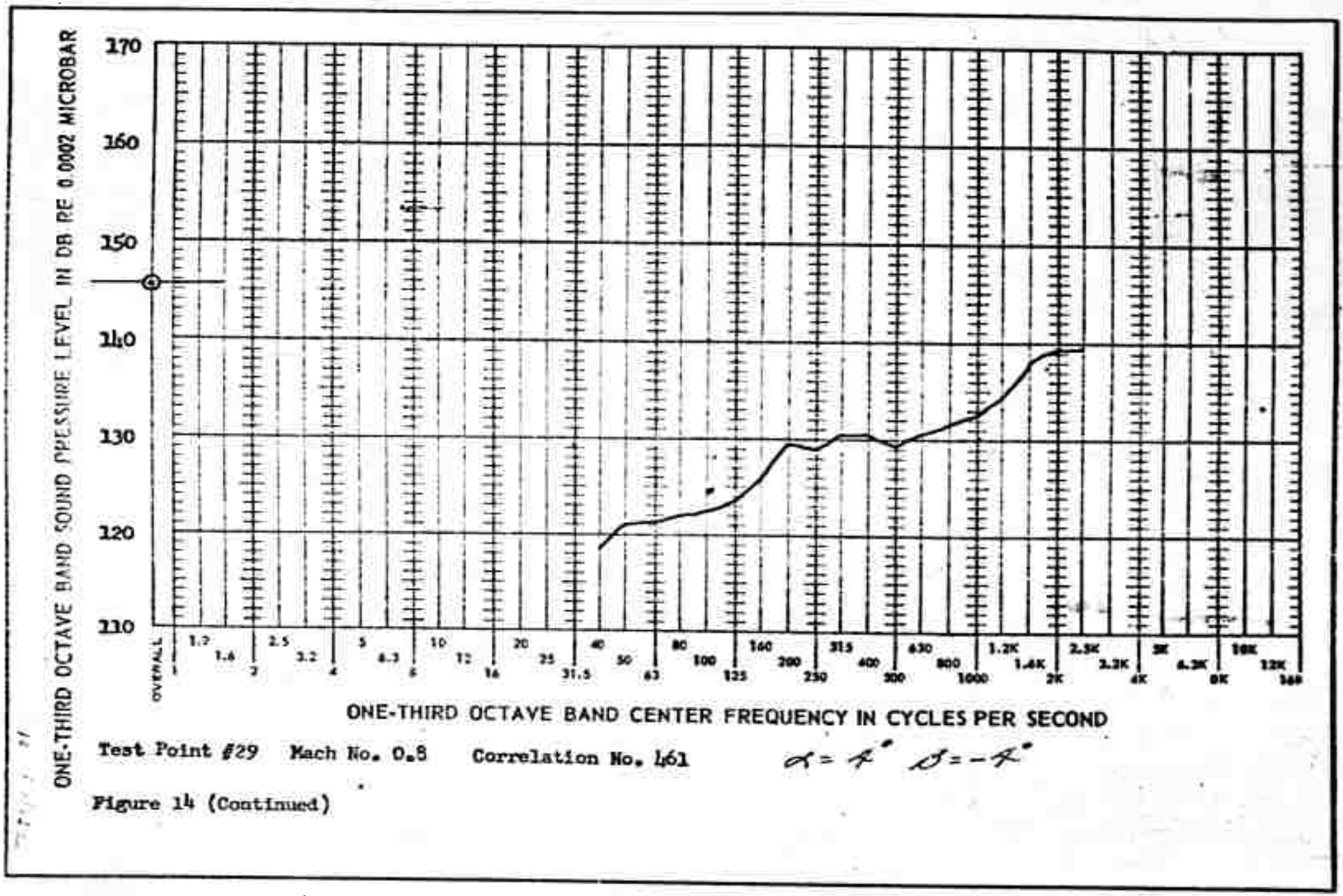
Test Point #29 Mach No. 0.75 Correlation No. 456 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



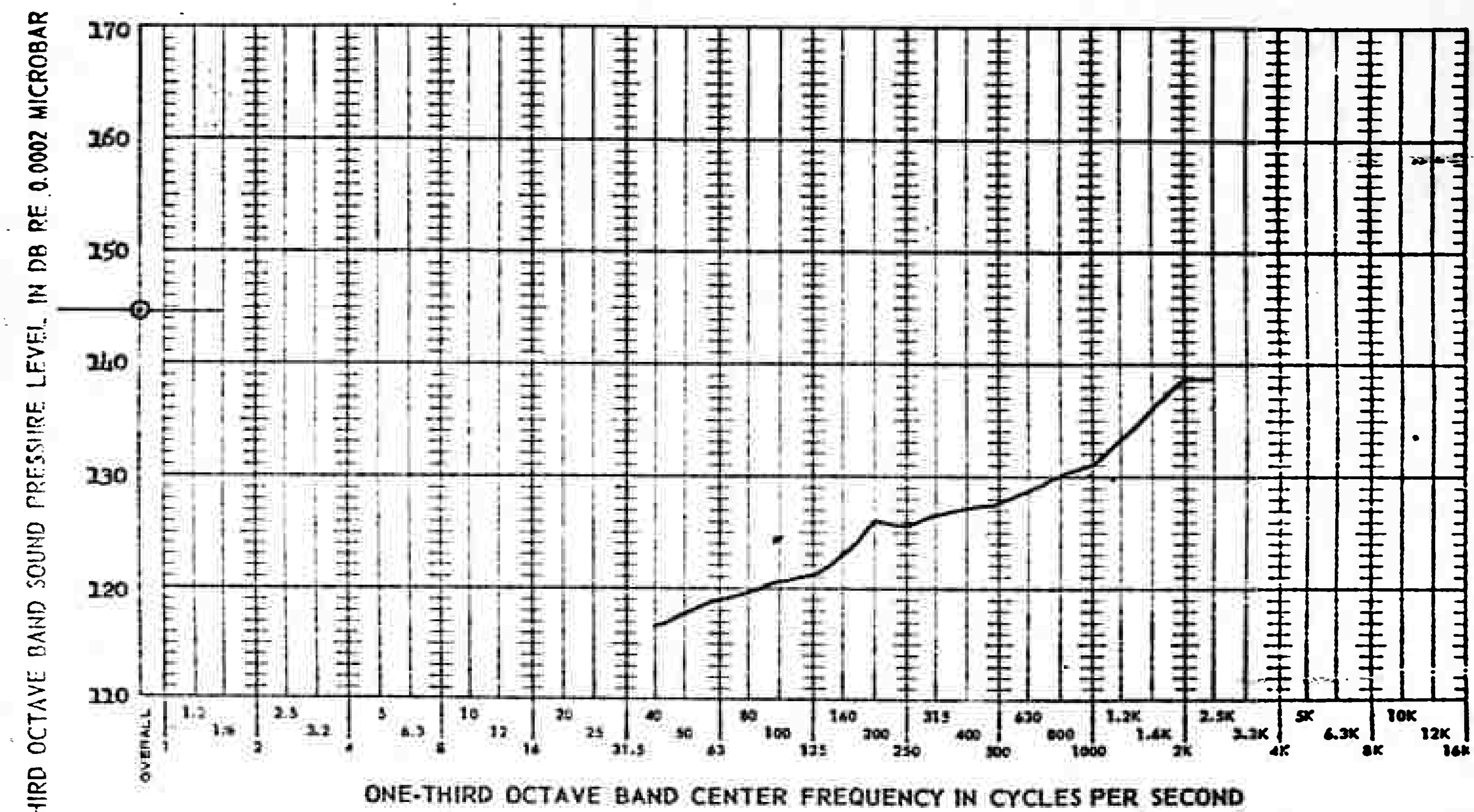
Test Point #29 Mach No. 0.75 Correlation No. 457 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



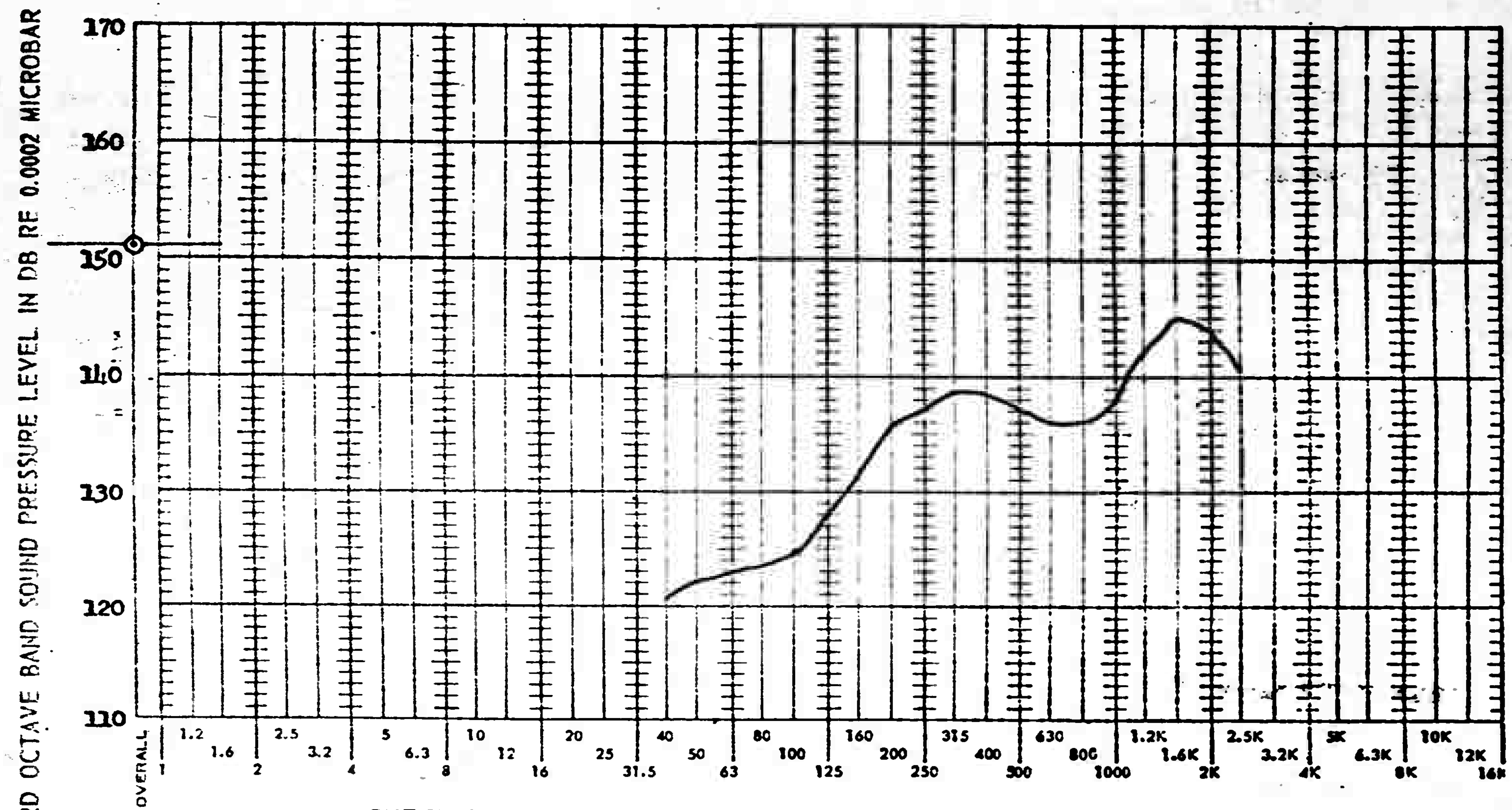
Test Point #29 Mach No. 0.8 Correlation No. 461 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



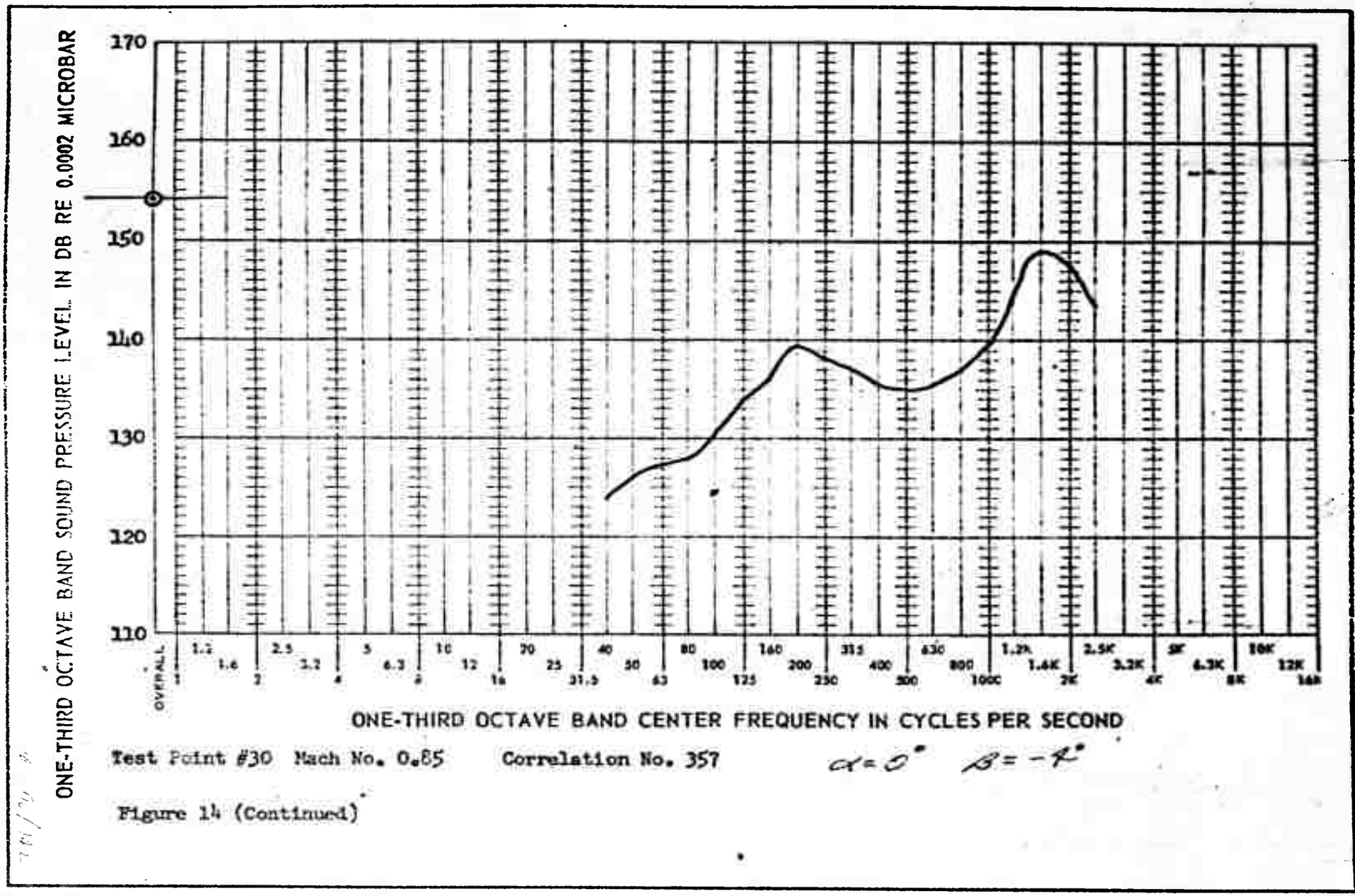
Test Point #29 Mach No. 0.82 Correlation No. 462 α = 4° β = −4°

Figure 14 (Continued)



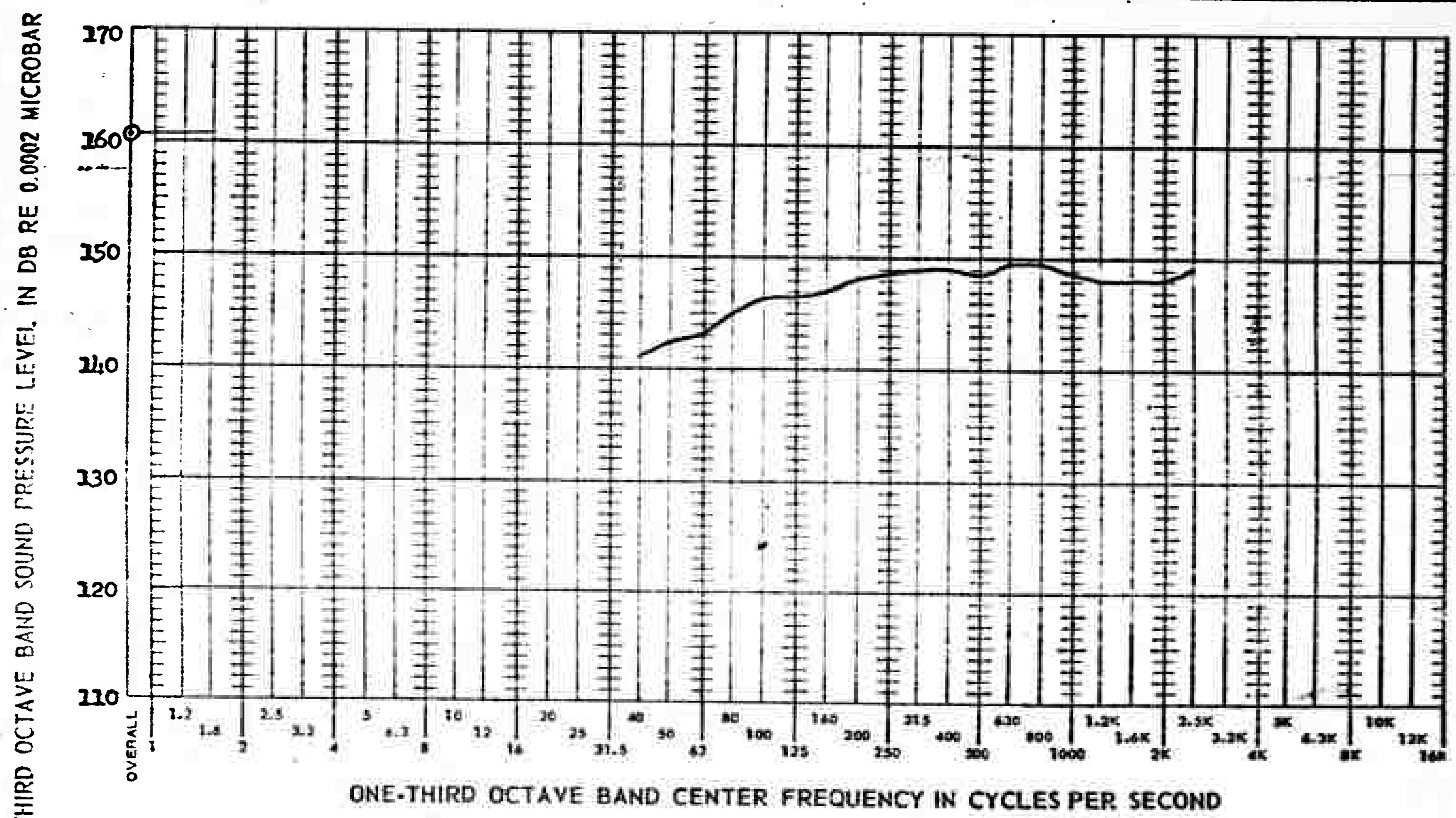
Test Point #30 Mach No. 0.8 Correlation No. 356 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



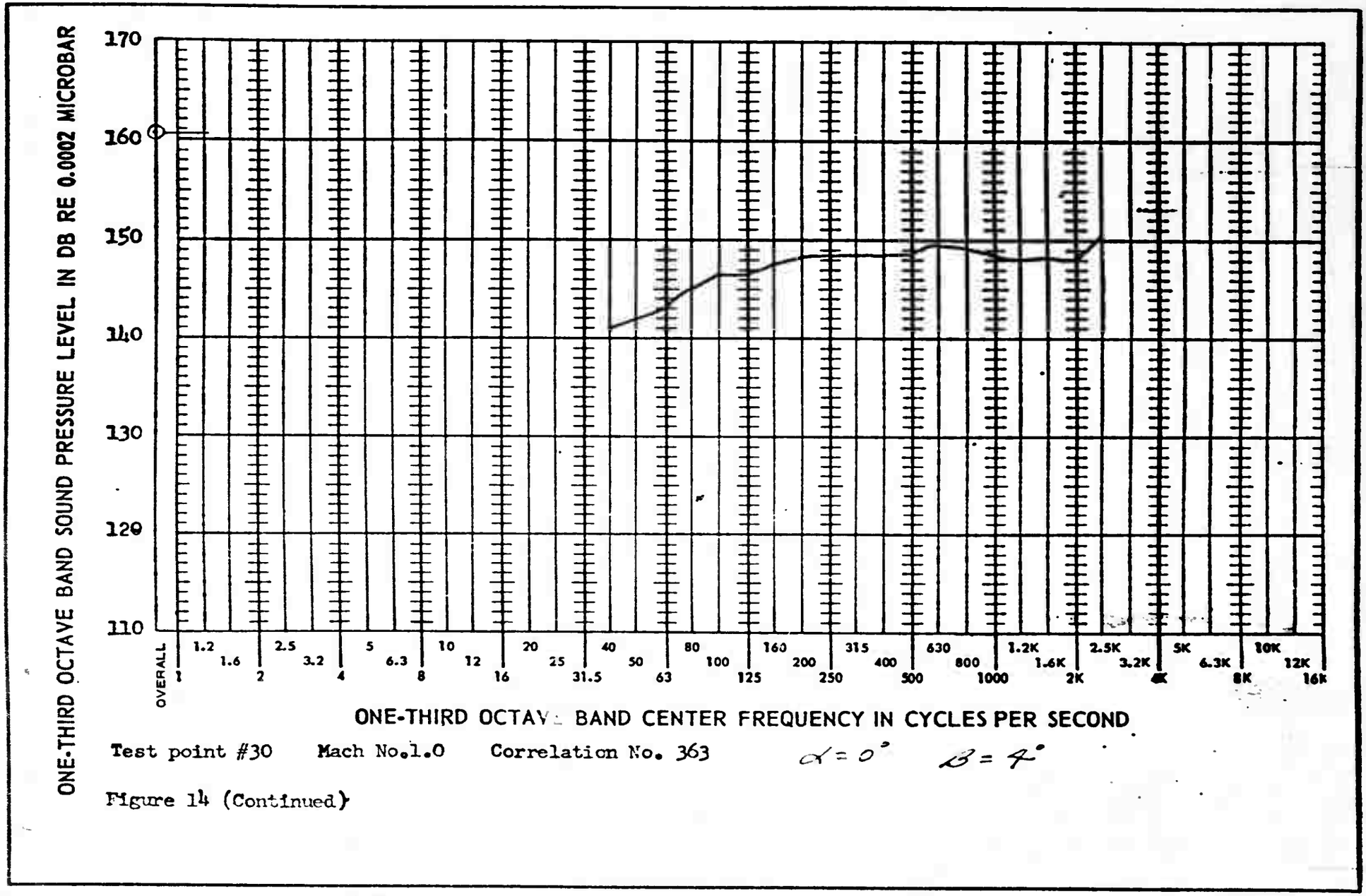
Test Point #30 Mach No. 0.85 Correlation No. 357 $\alpha = 0°$ $\beta = -2°$

Figure 14 (Continued)



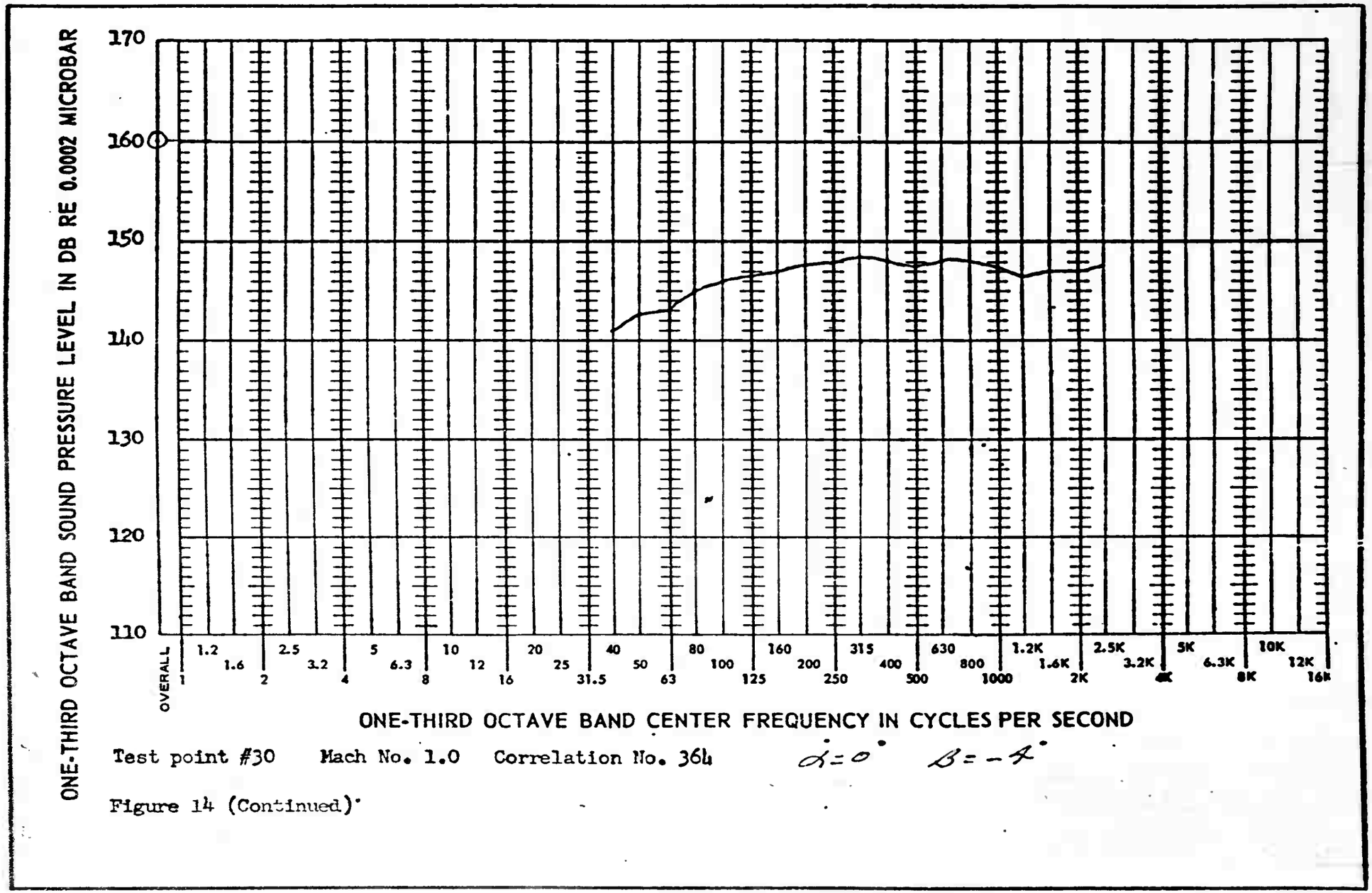
Test Point #30 Mach No. 0.95 Correlation No. 362 α = 0° β = 4°

Figure 14 (Continued)



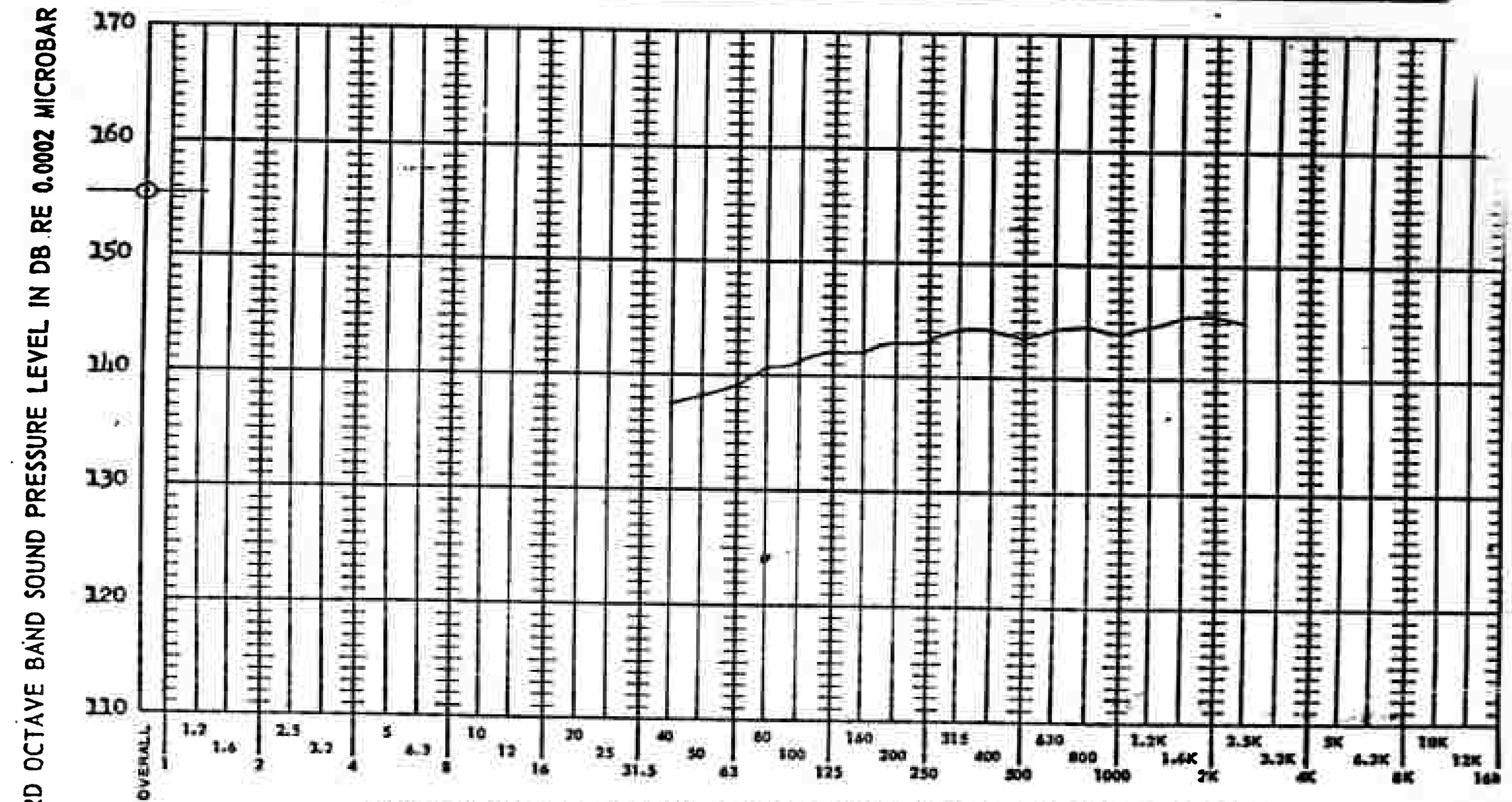
Test point #30 Mach No.1.0 Correlation No. 363 $\alpha = 0°$ $\beta = 4°$

Figure 14 (Continued)



Test point #30 Mach No. 1.0 Correlation No. 364 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



Test point #30 Mach No. 1.08 Correlation No. 365 α = 0° β = -4°

Figure 14 (Continued)

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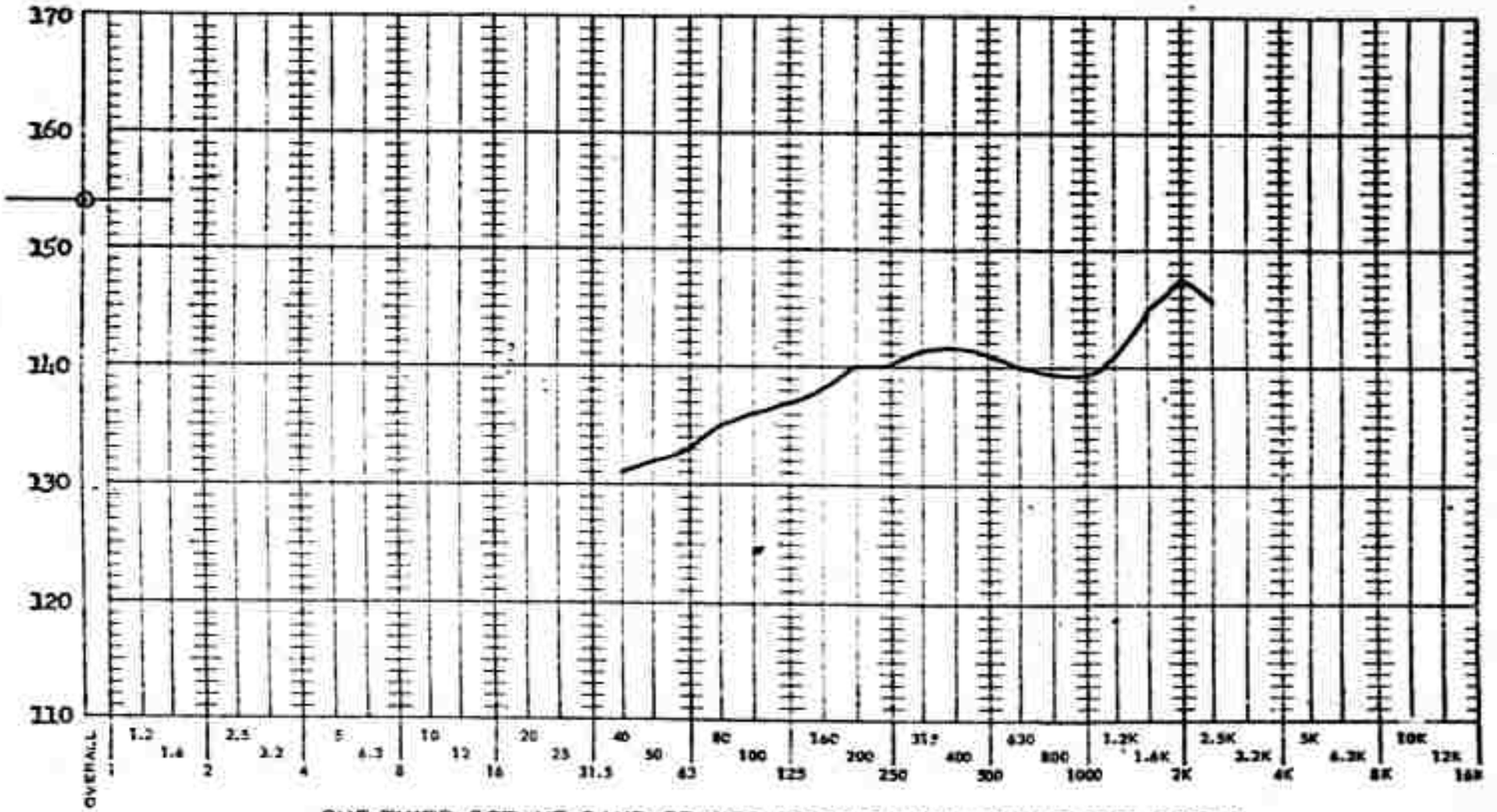
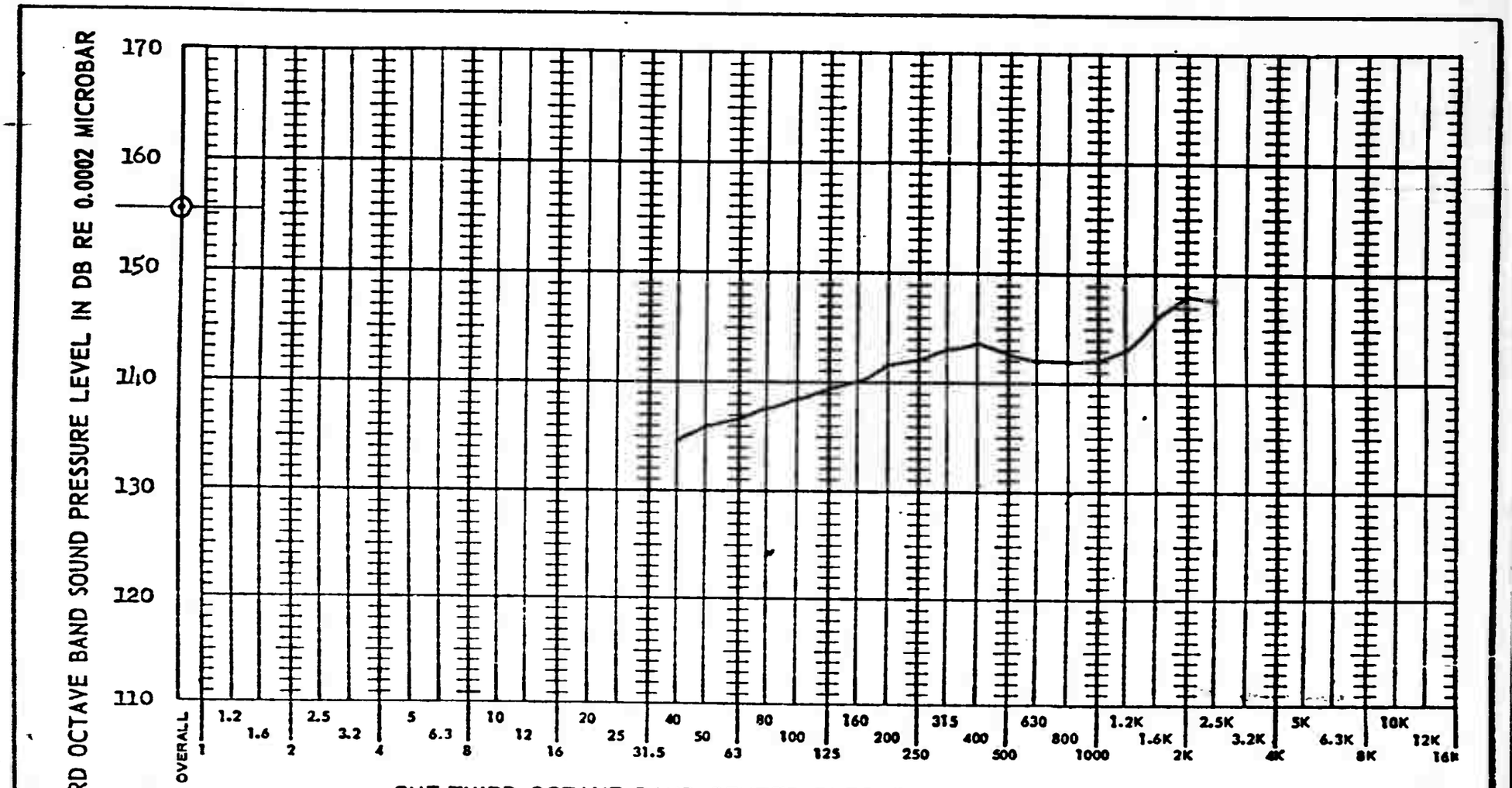


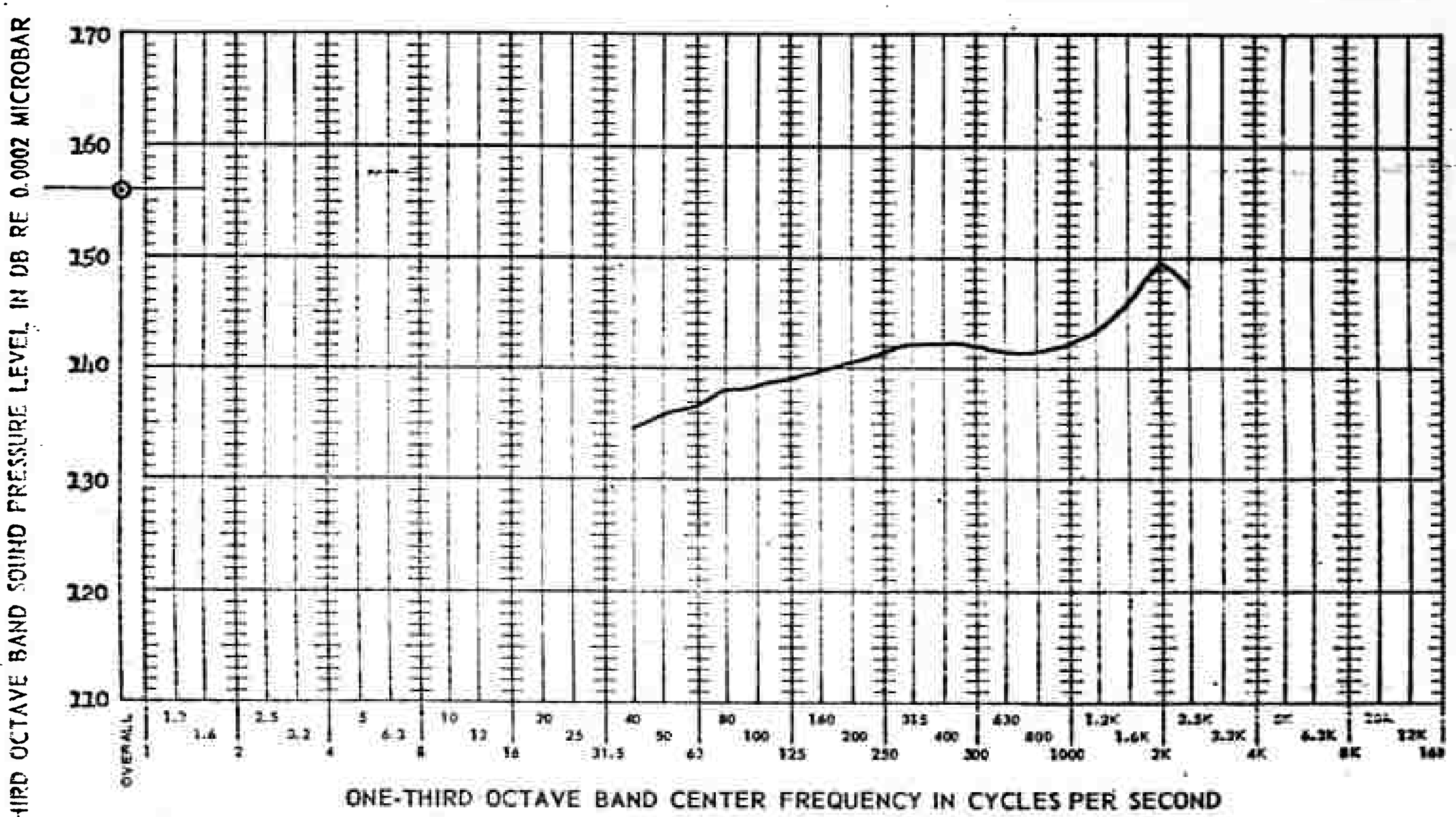
Test Point #31 Mach No. 0.84 Correlation No. 467 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



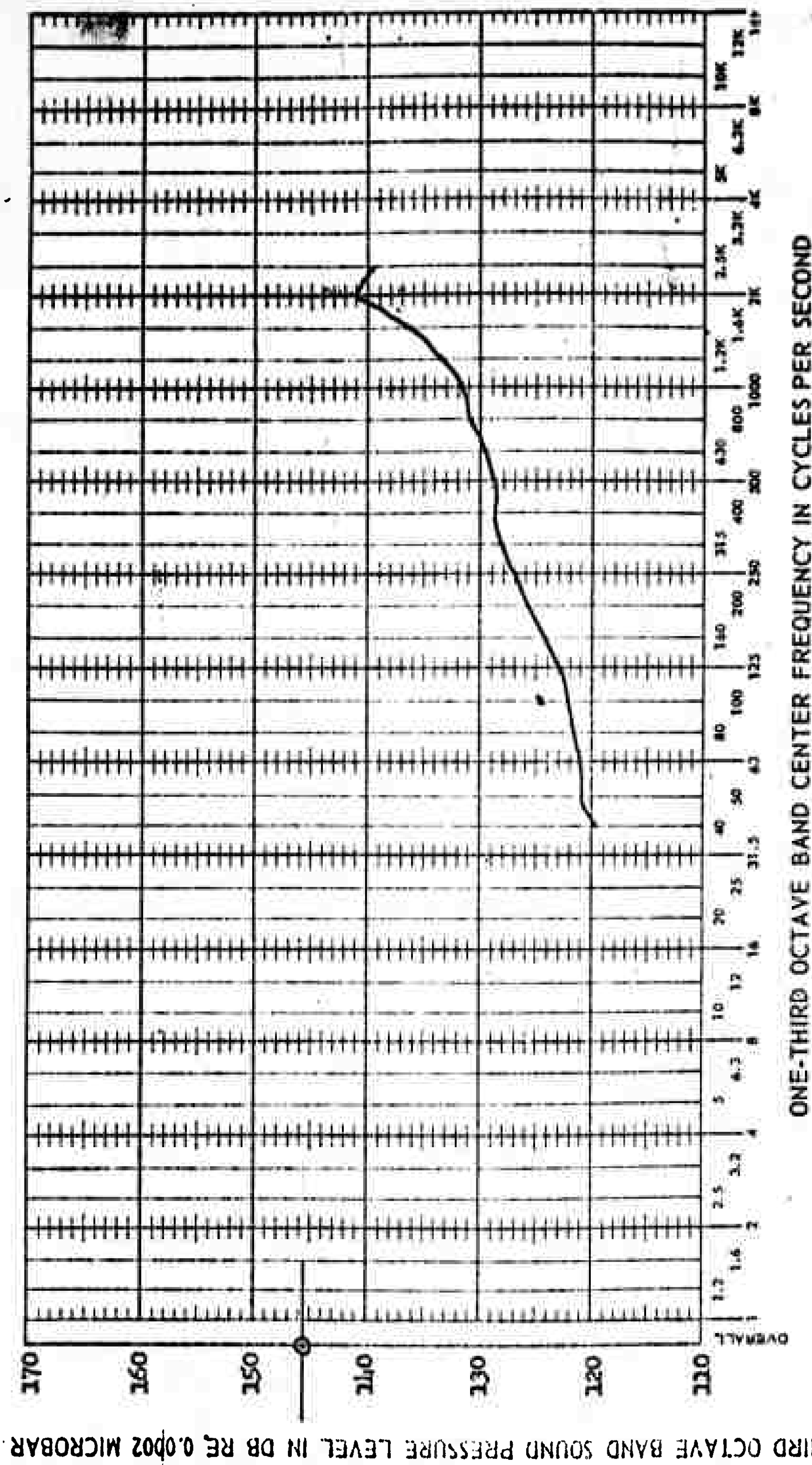
Test Point #31 Mach No. 0.86 Correlation No. 468 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



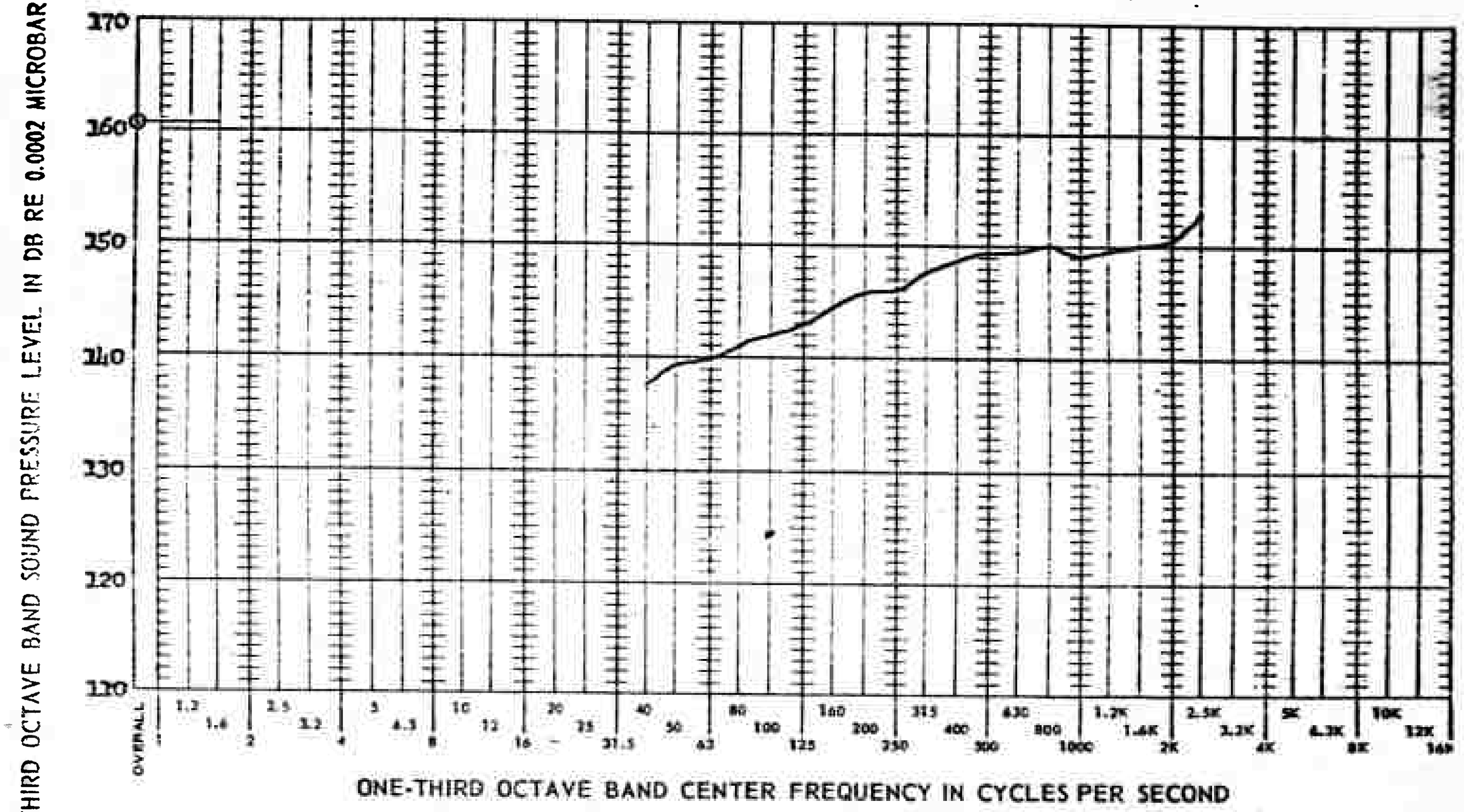
Test Point #31 Mach No. 0.68 Correlation No. 473 α = 4° β = -4°

Figure 14 (Continued)



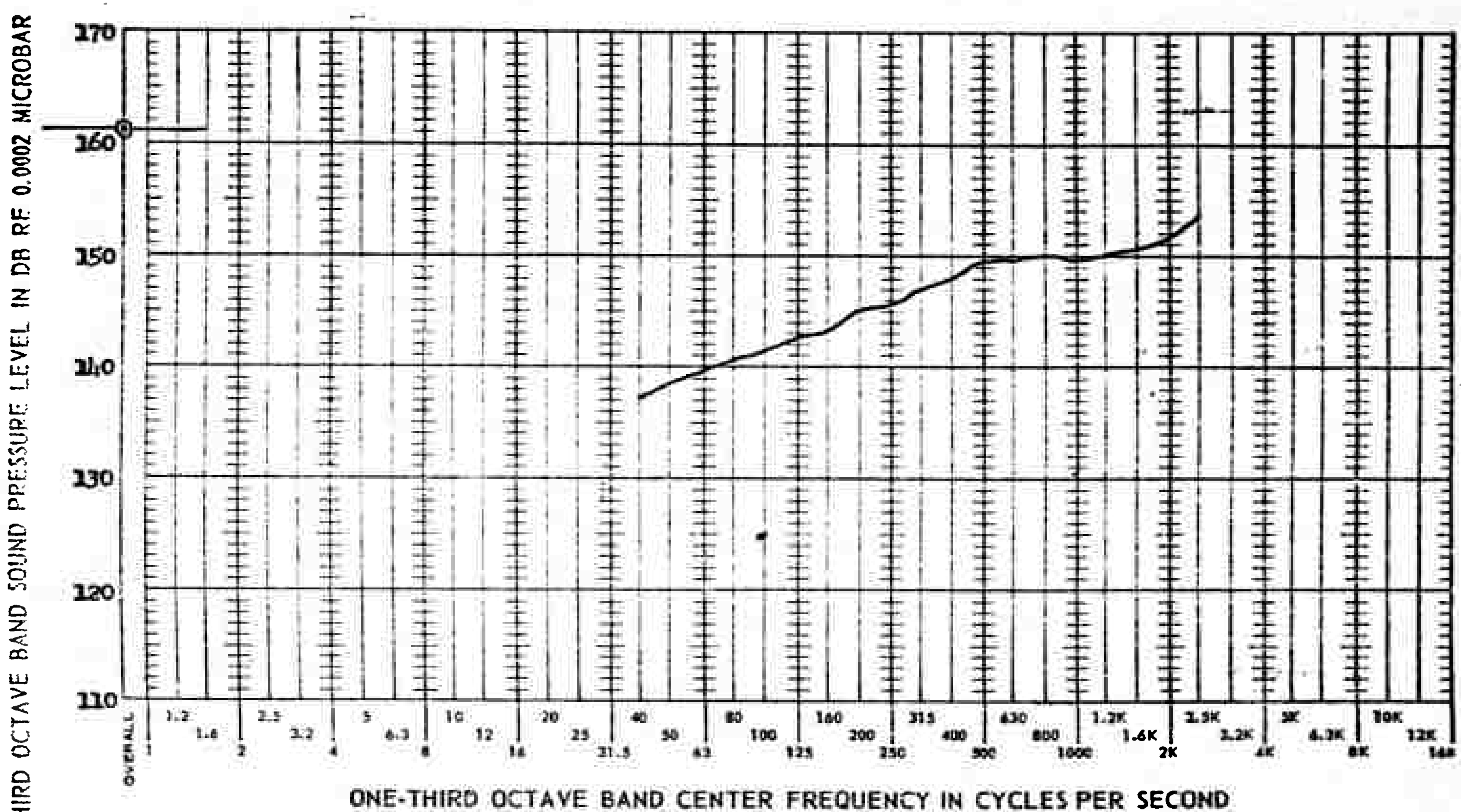
Test Point #31 Mach No. 0.94 Correlation No. 180 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



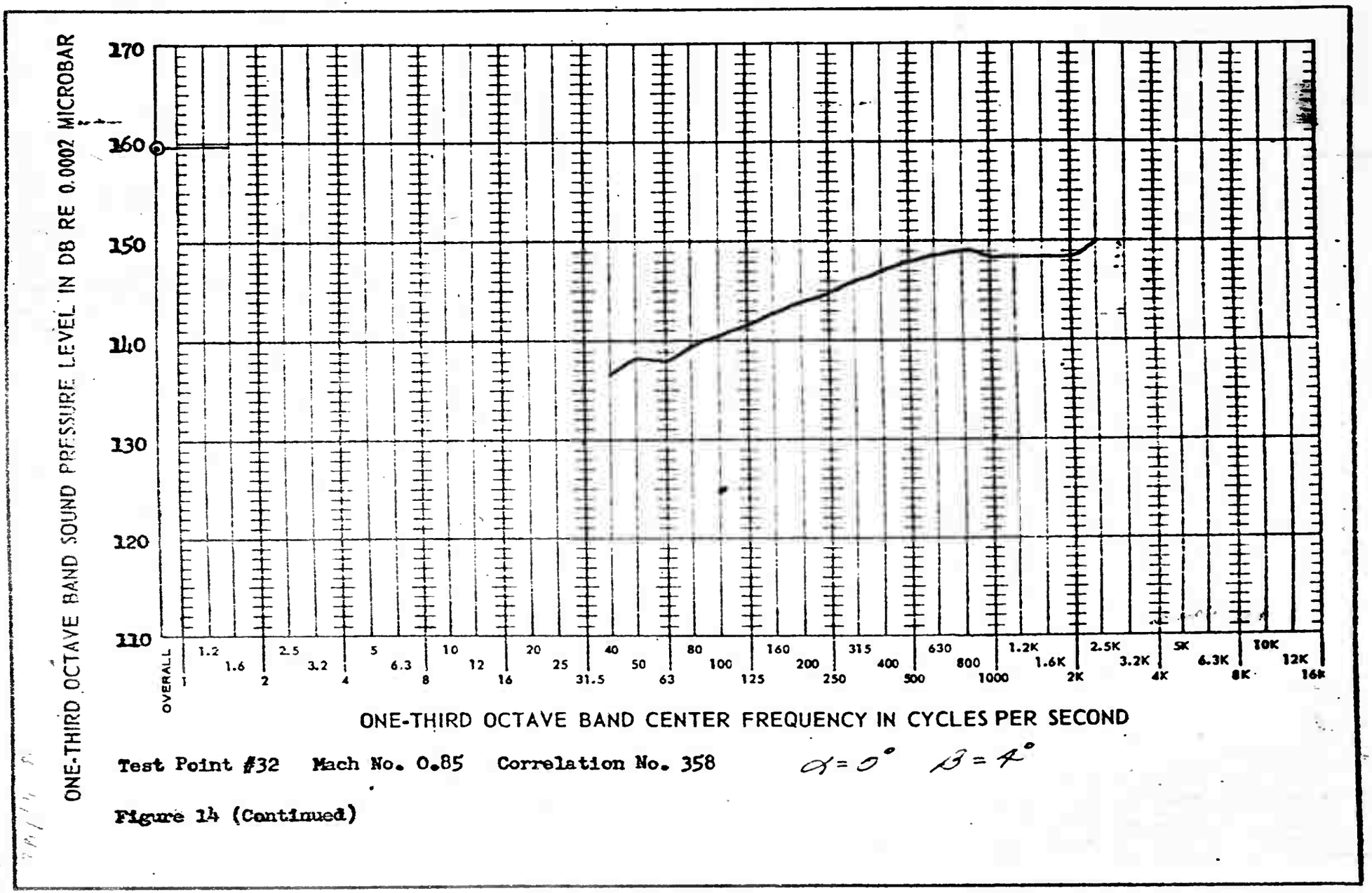
Test Point #32 Mach No. 0.8 Correlation No. 356 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



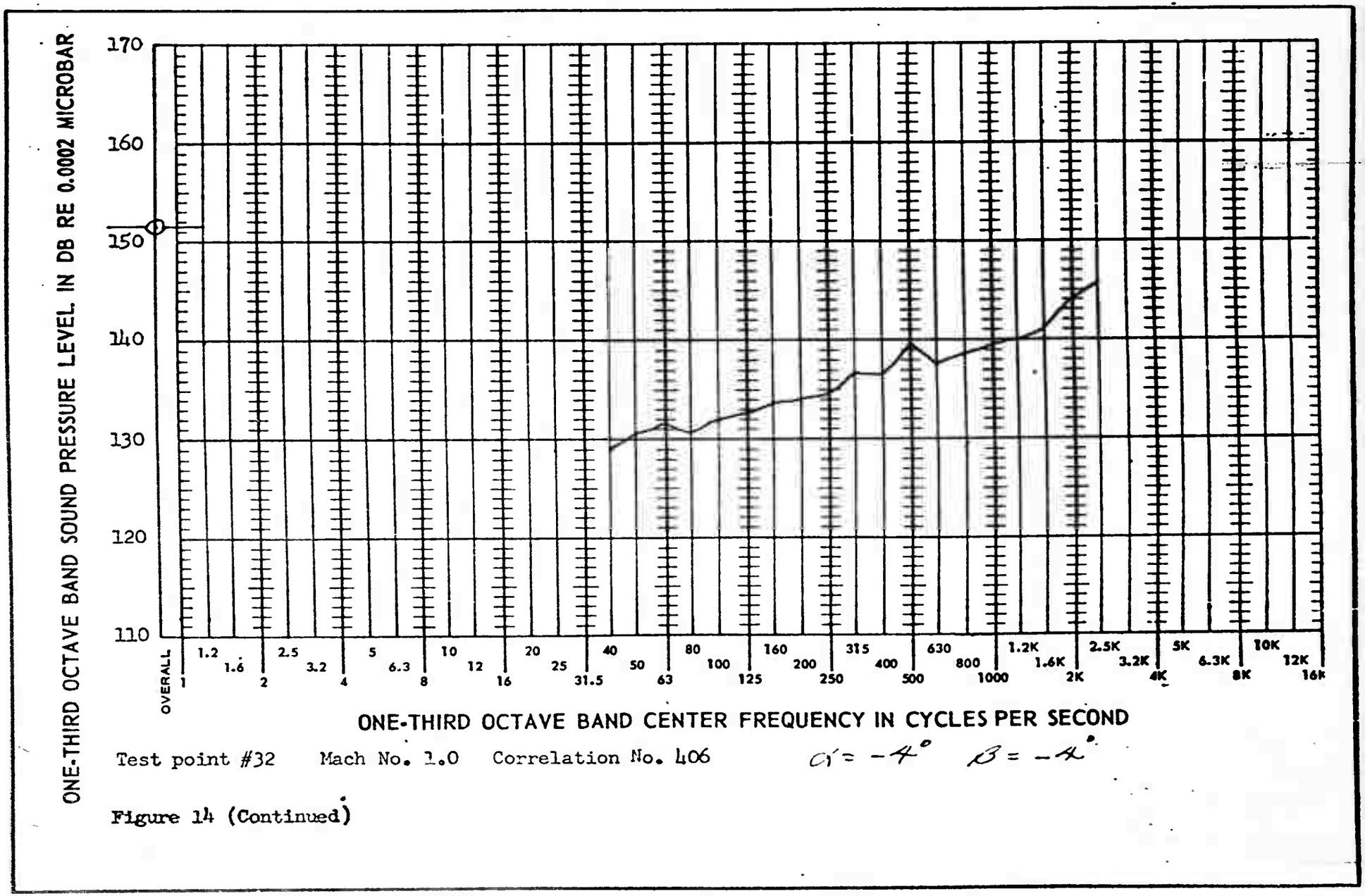
Test Point #32 Mach No. 0.85 Correlation No. 357 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



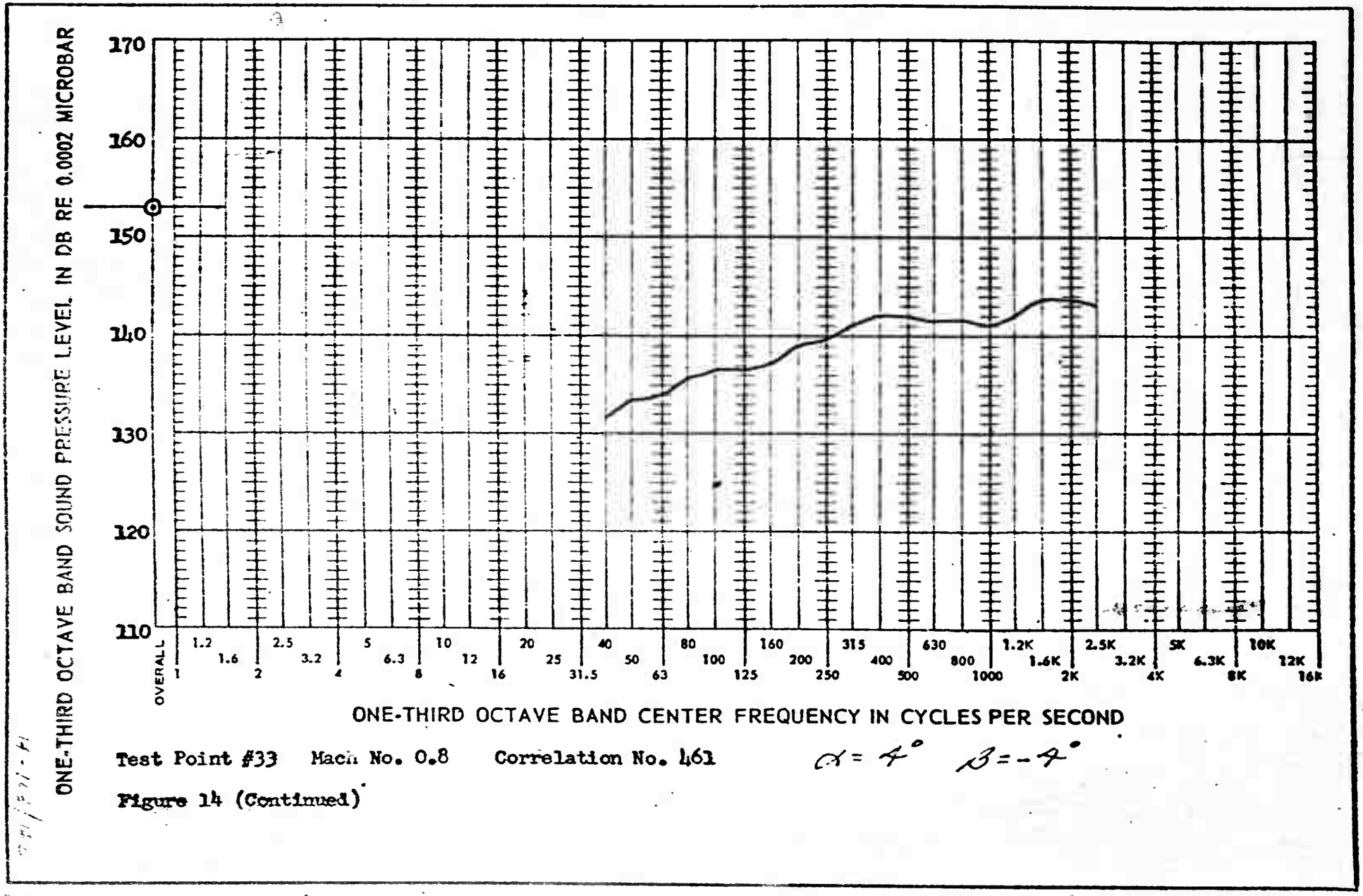
Test Point #32 Mach No. 0.85 Correlation No. 358 $\alpha = 0°$ $\beta = 4°$

Figure 14 (Continued)



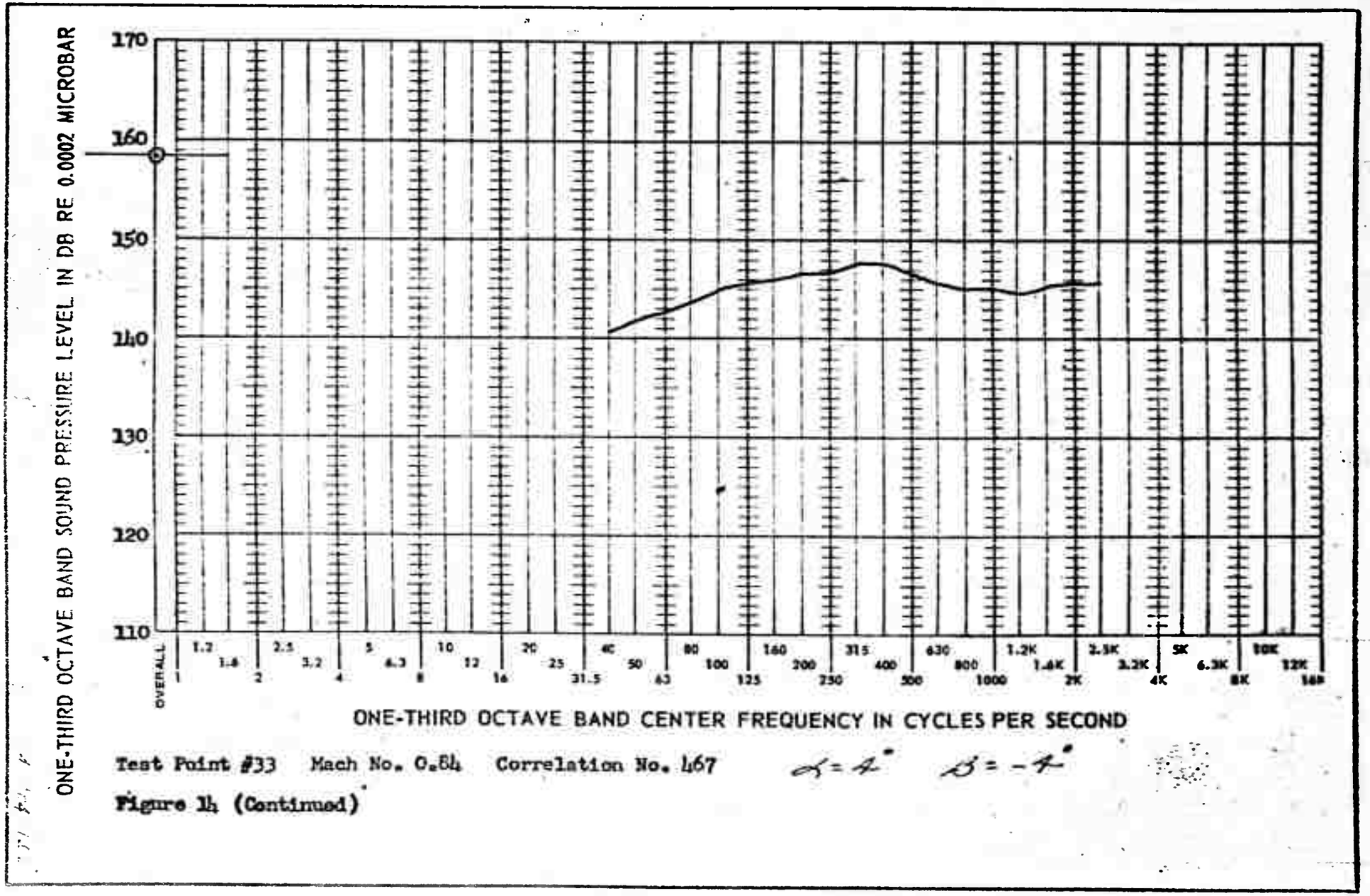
Test point #32 Mach No. 1.0 Correlation No. 406 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



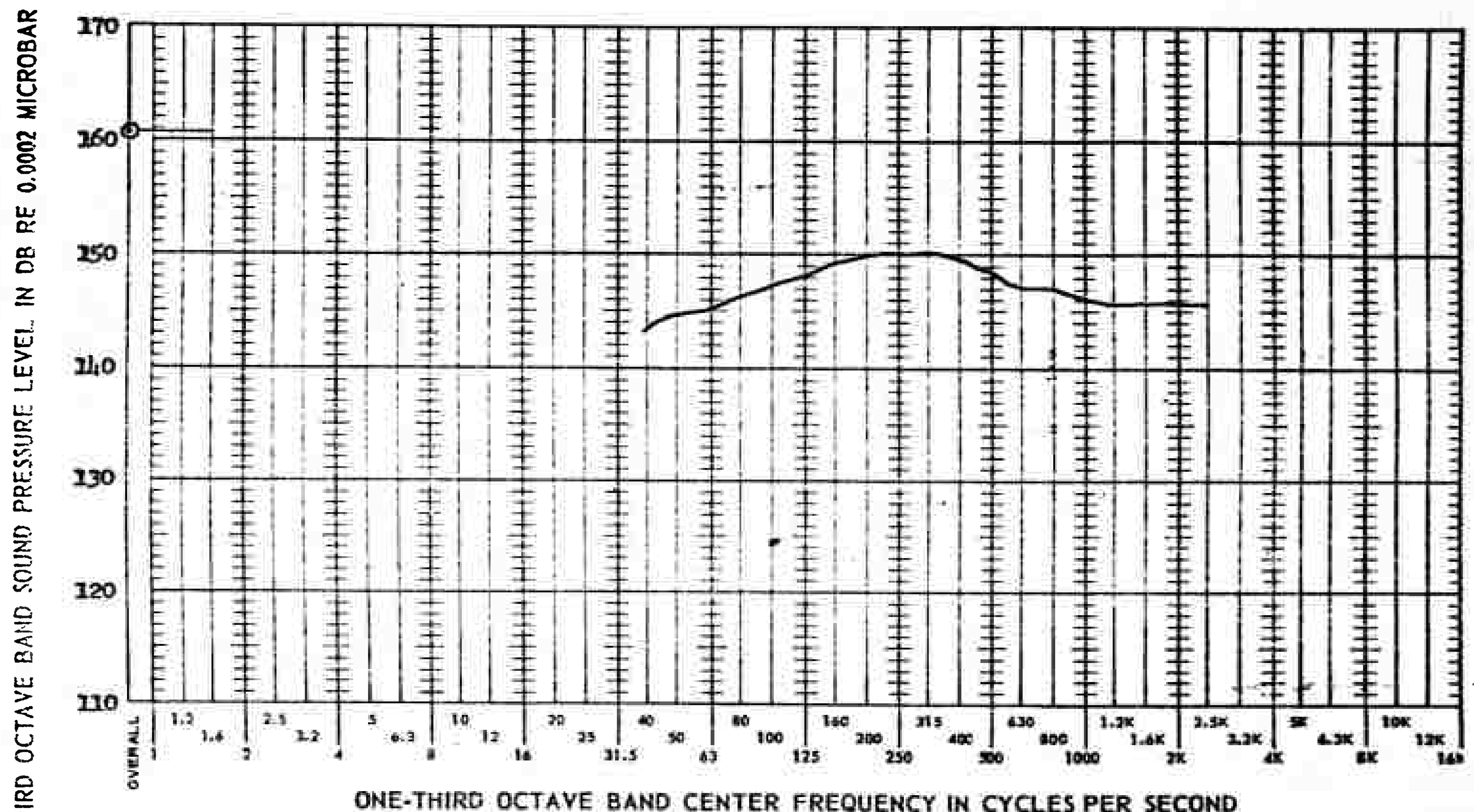
Test Point #33 Mach No. 0.8 Correlation No. 461 $\alpha = 4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



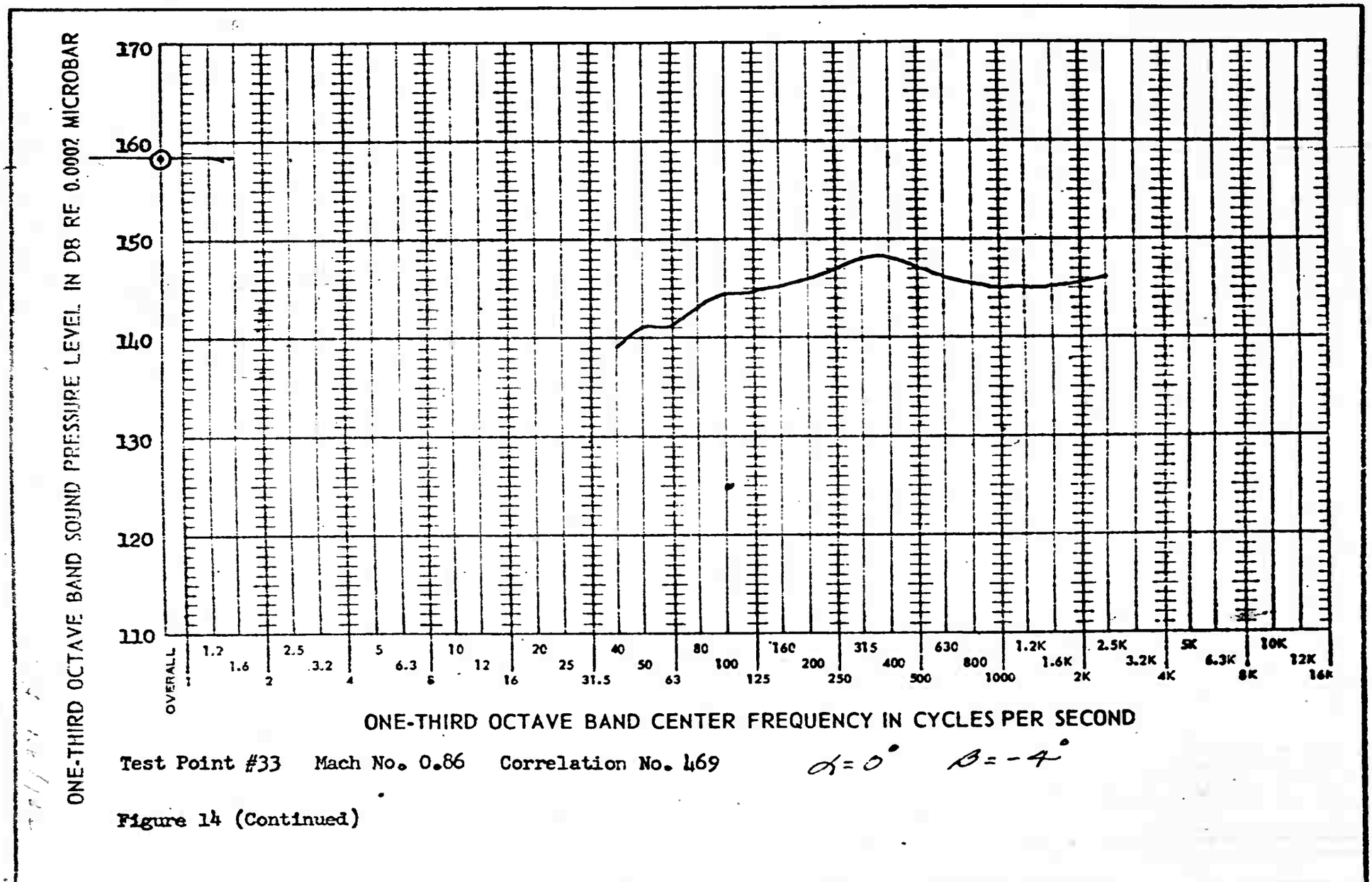
Test Point #33 Mach No. 0.84 Correlation No. 467 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



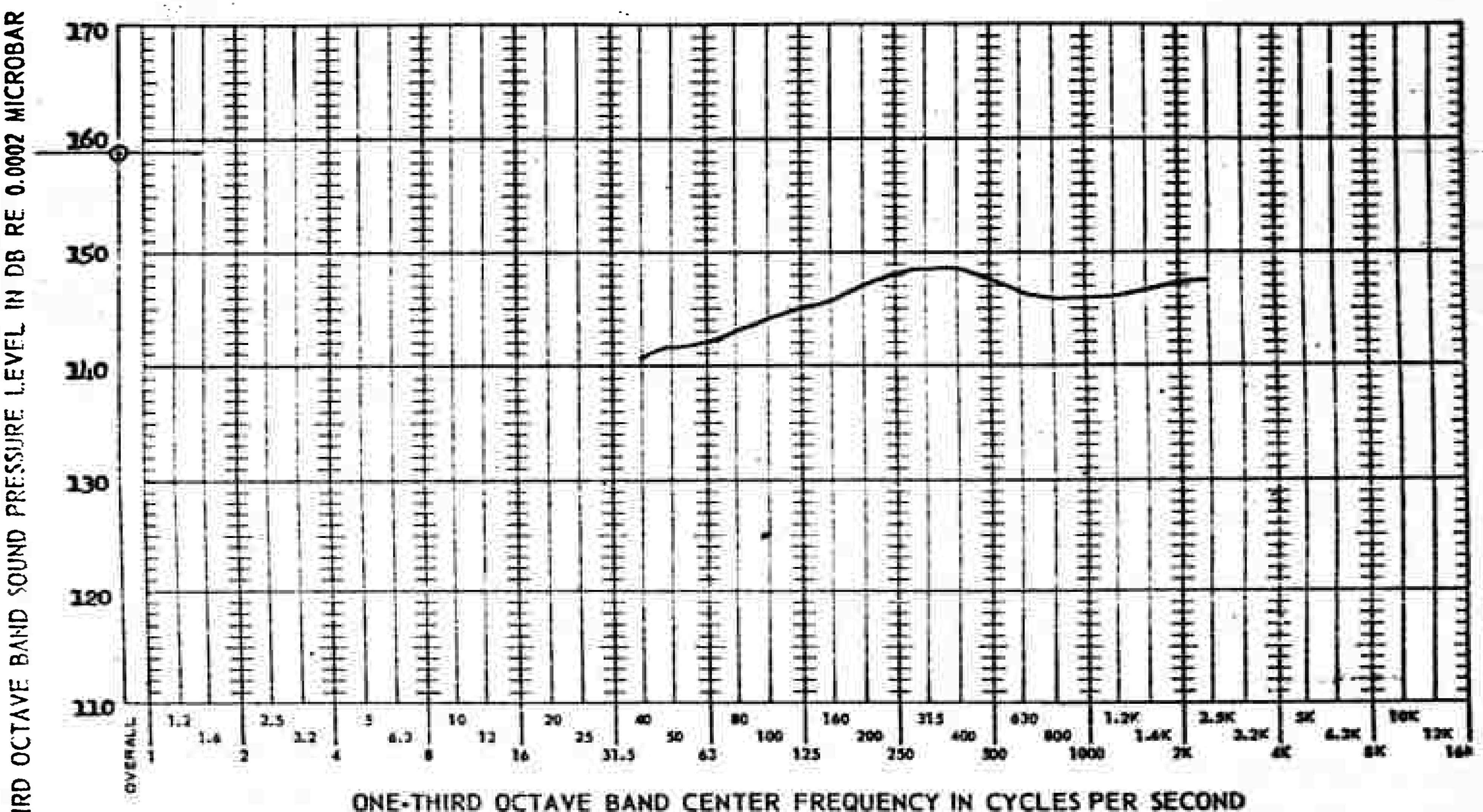
Test Point #33 Mach No. 0.86 Correlation No. 468 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



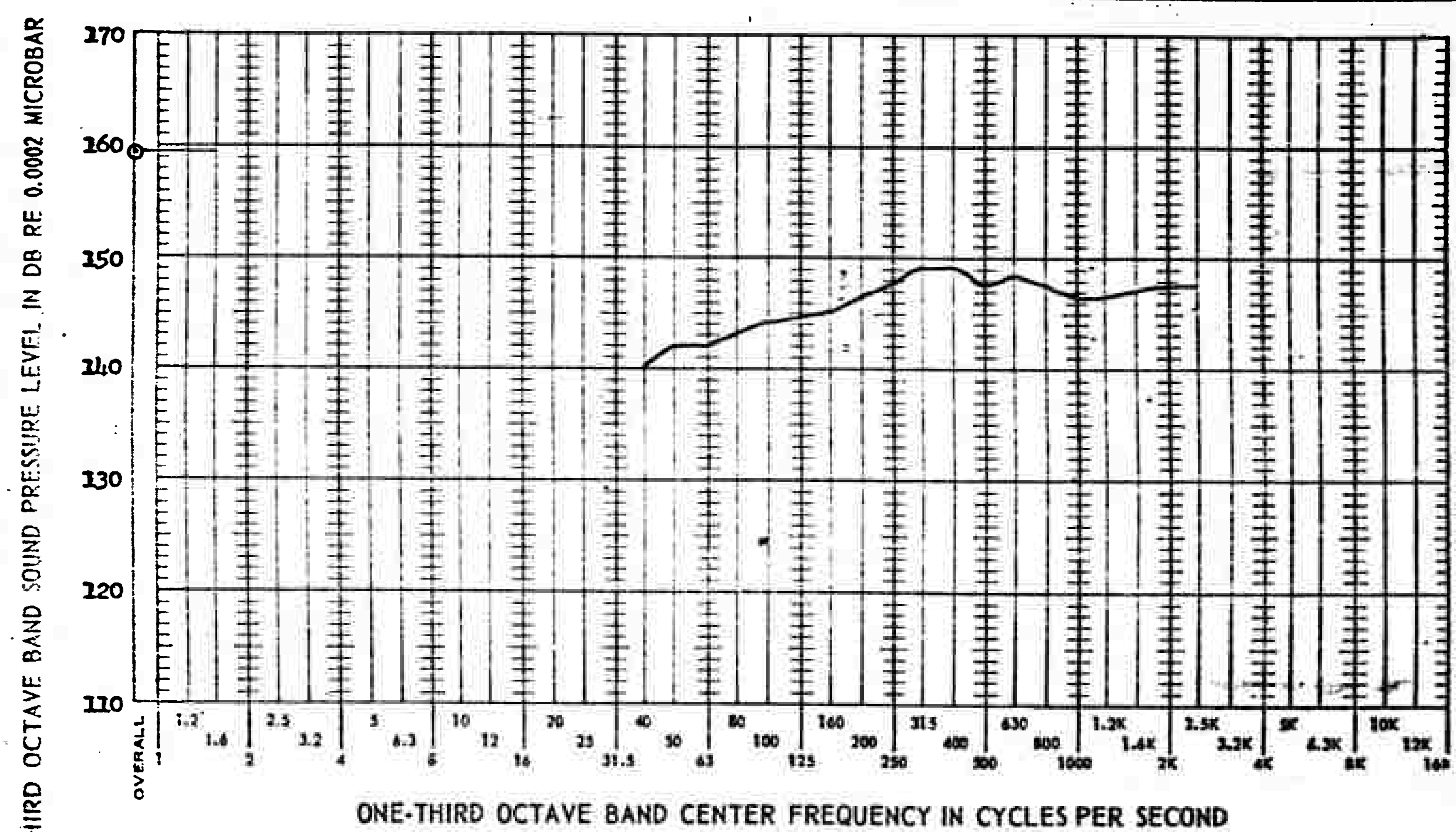
Test Point #33 Mach No. 0.86 Correlation No. 469 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



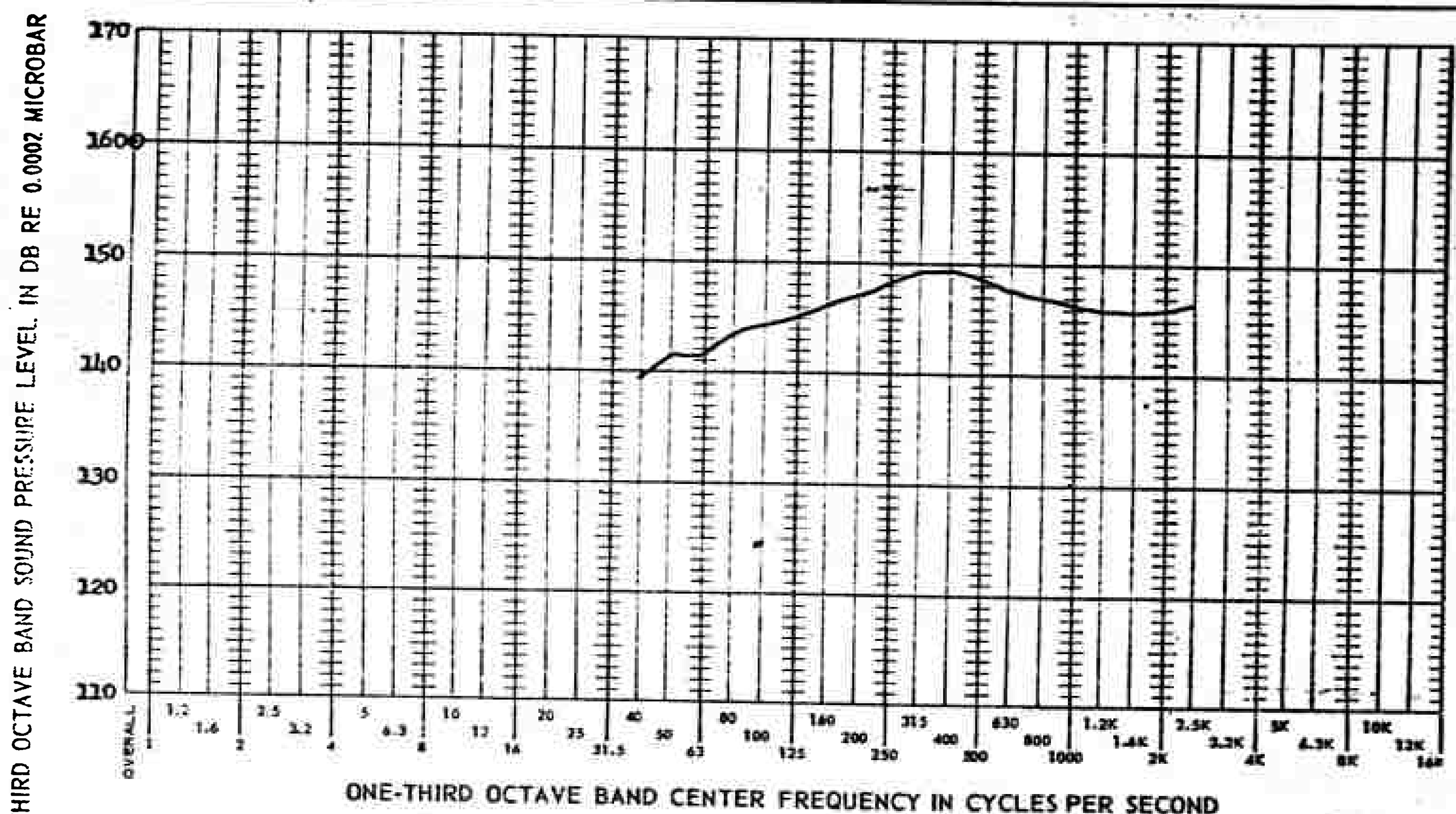
Test Point #33 Mach No. 0.86 Correlation No. 470 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



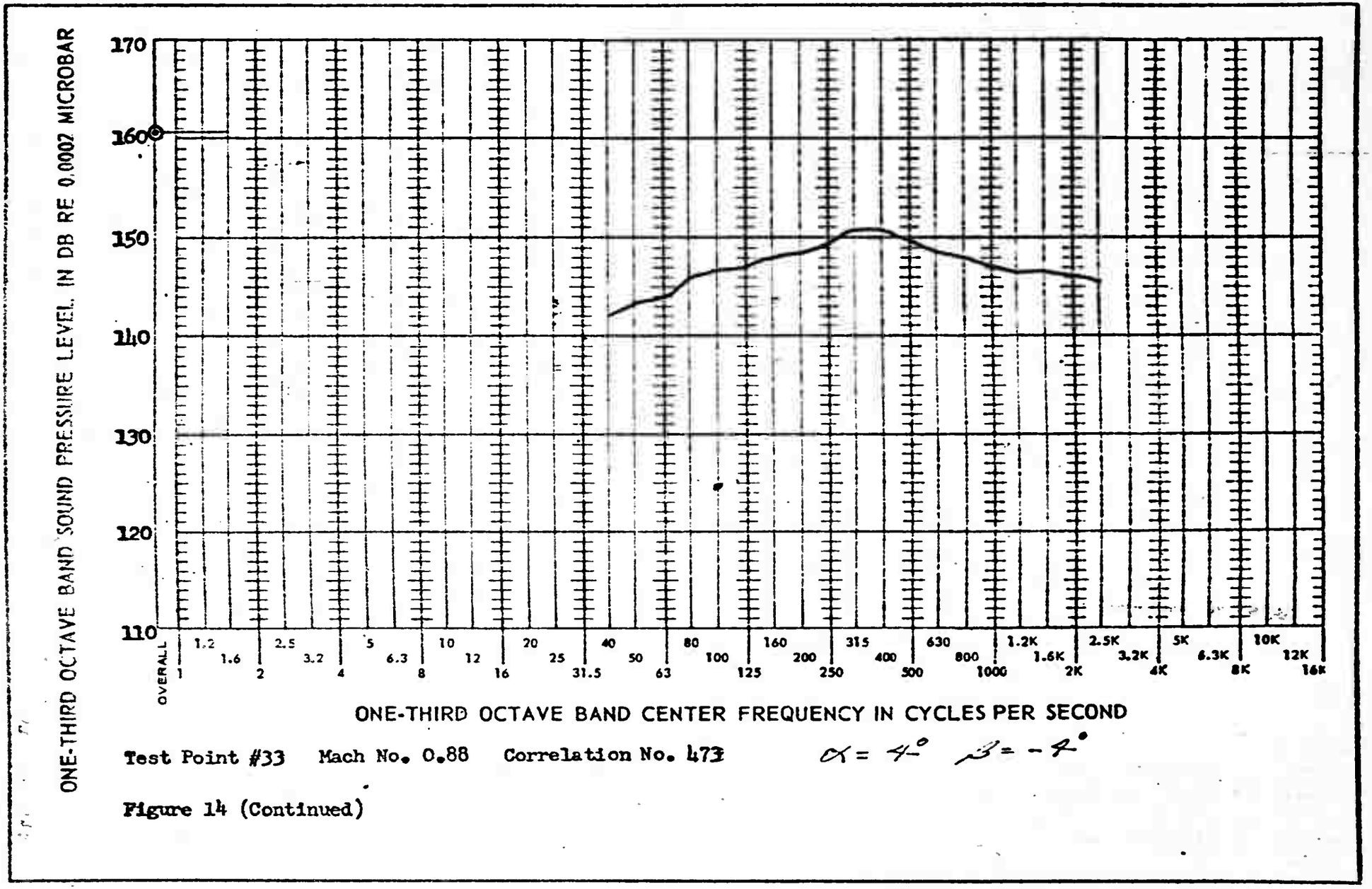
Test Point #33 Mach No. 0.88 Correlation No. 471 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



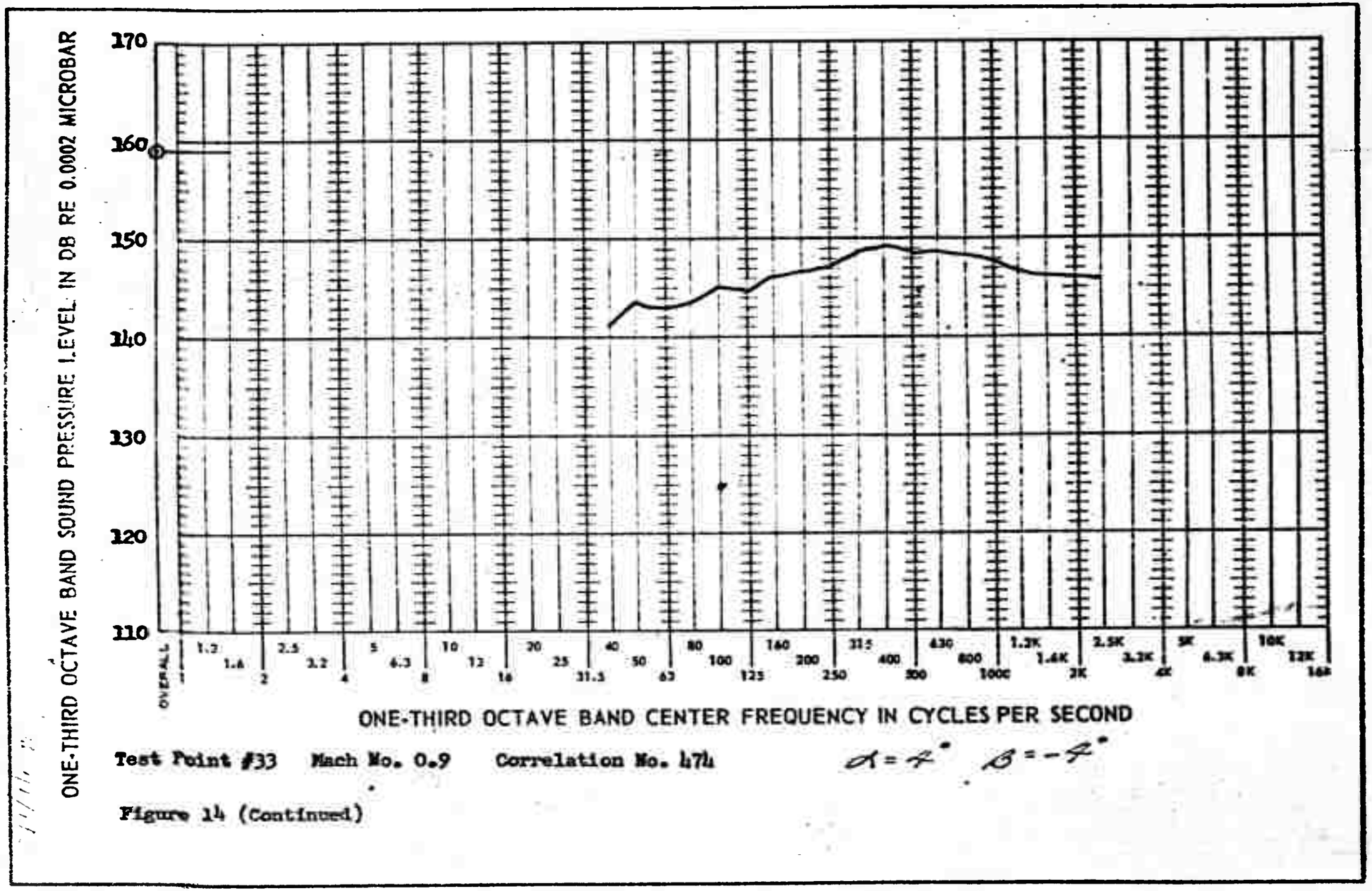
Test Point #33 Mach No. 0.88 Correlation No. 472 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



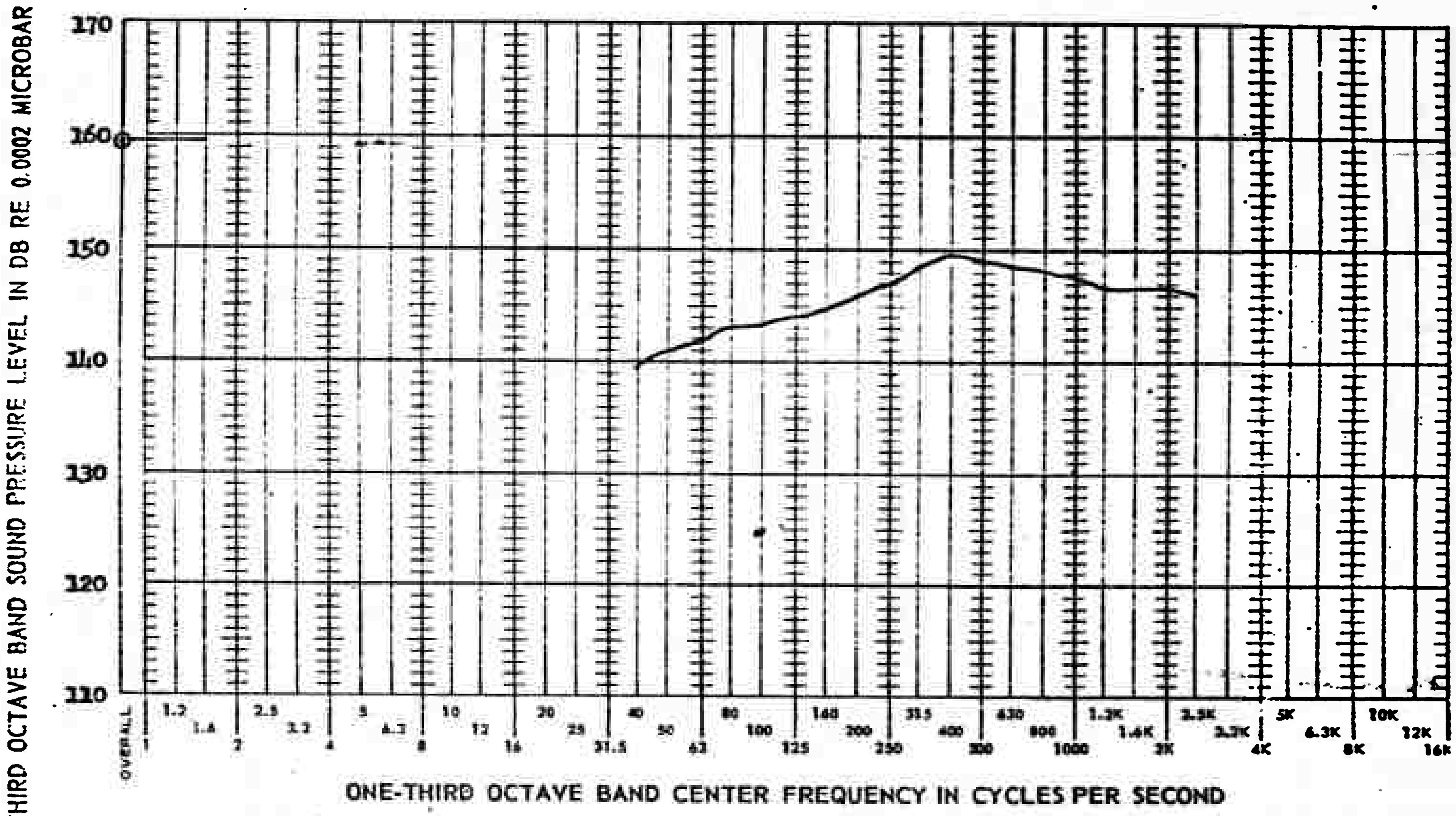
Test Point #33 Mach No. 0.88 Correlation No. 473 $\alpha = 4^\circ$ $\beta = -2^\circ$

Figure 14 (Continued)



Test Point #33 Mach No. 0.9 Correlation No. 474 $\alpha = 4^\circ$ $\beta = -4^\circ$

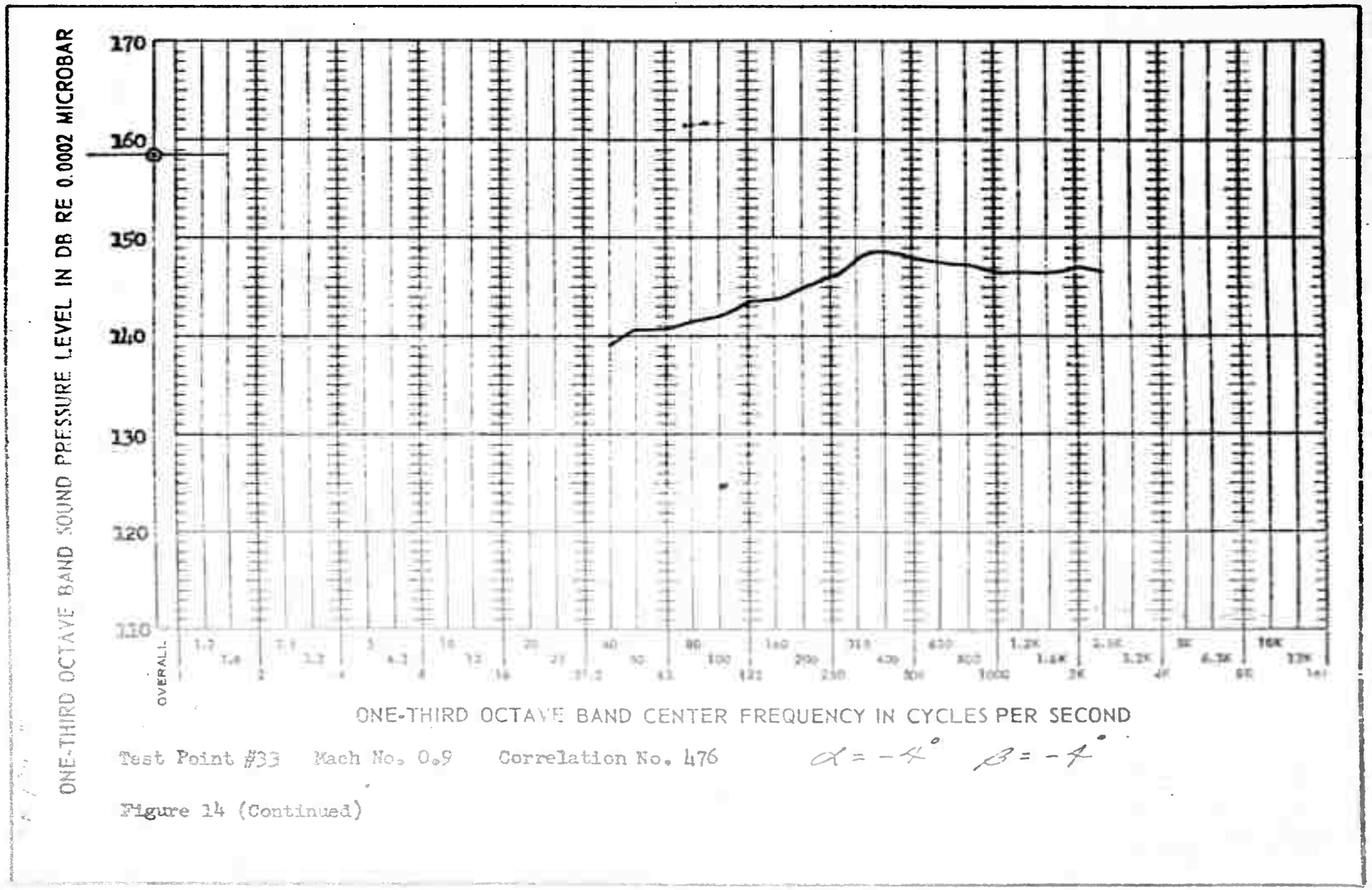
Figure 14 (Continued)



Test Point #33 Mach No. 0.9 Correlation No. 475 $\alpha = 0°$ $\beta = -4°$

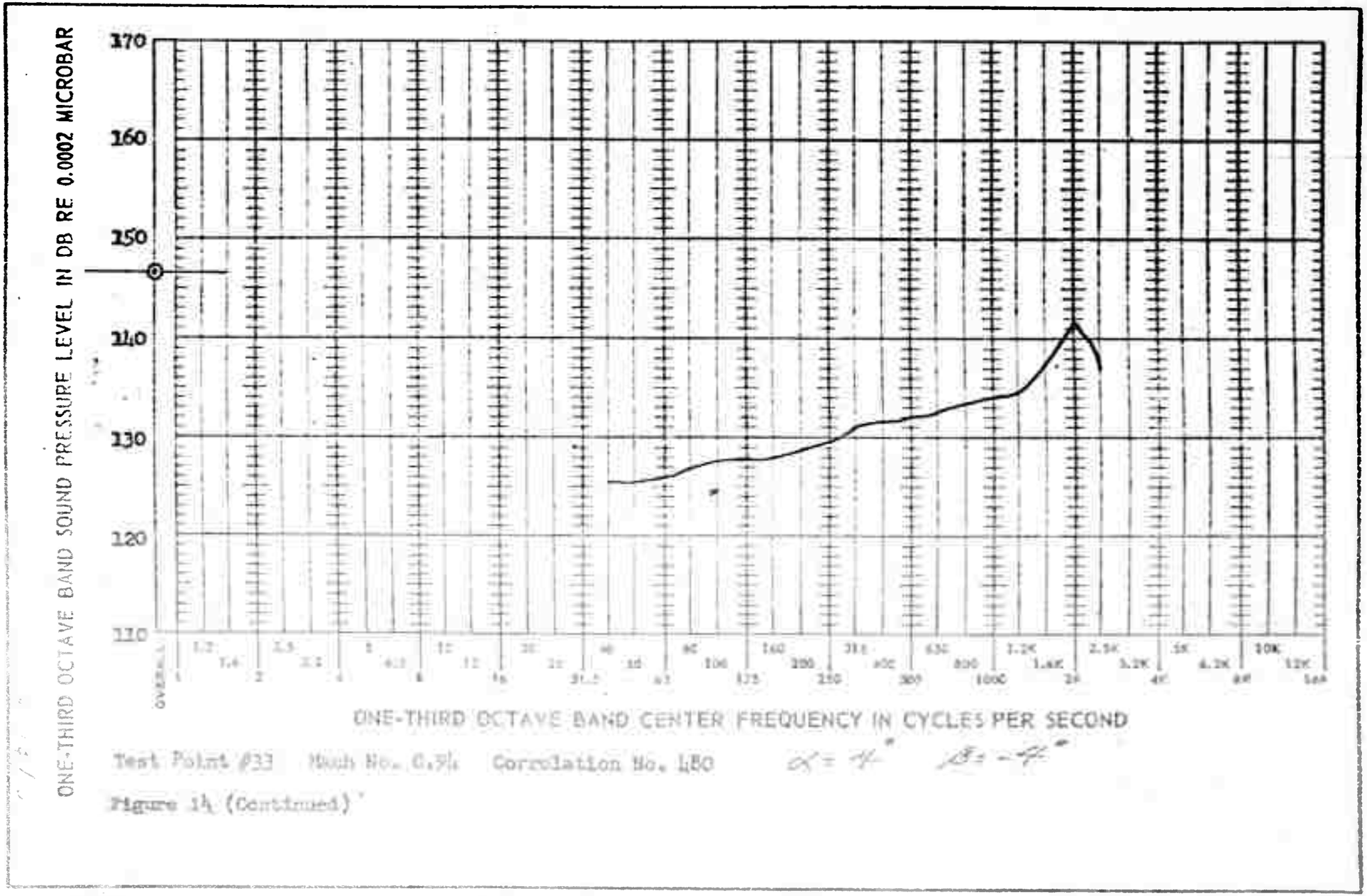
Figure 14 (Continued)

183



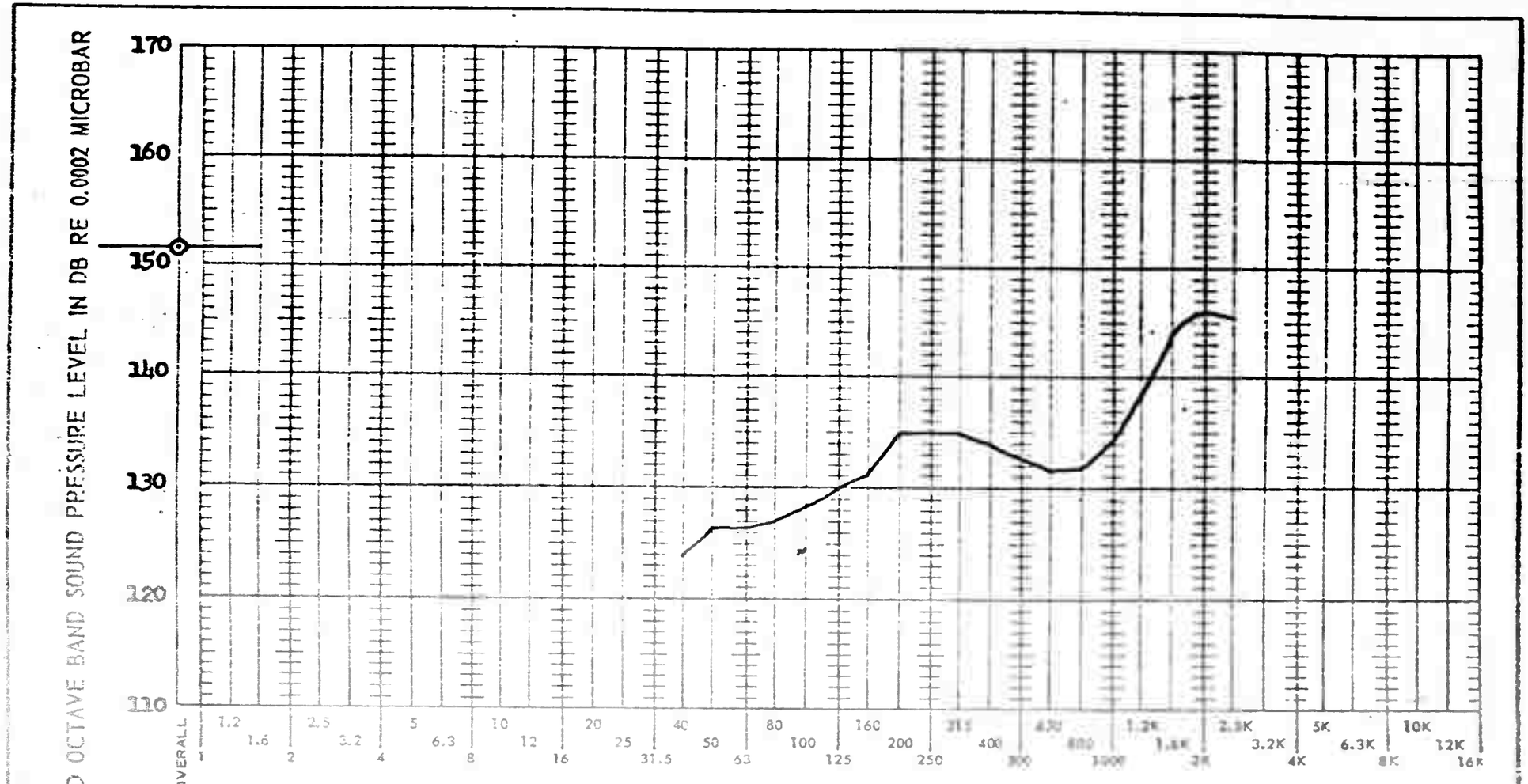
Test Point #33 Mach No. 0.9 Correlation No. 476 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



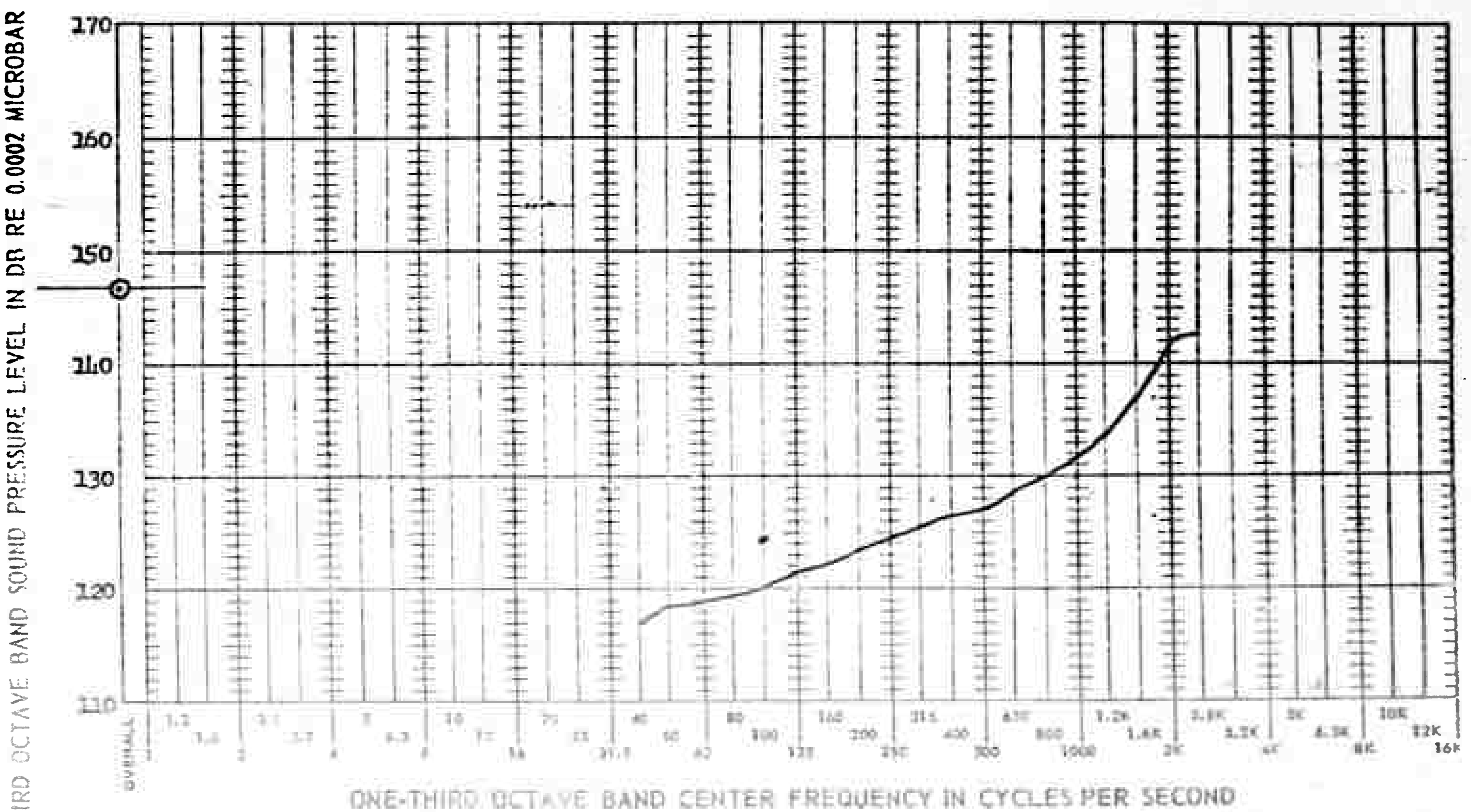
Test Point #33 Mach No. 0.94 Correlation No. 480 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



Test Point #34 Mach No. 0.85 Correlation No. 358 $\alpha = 0°$ $\beta = 2°$

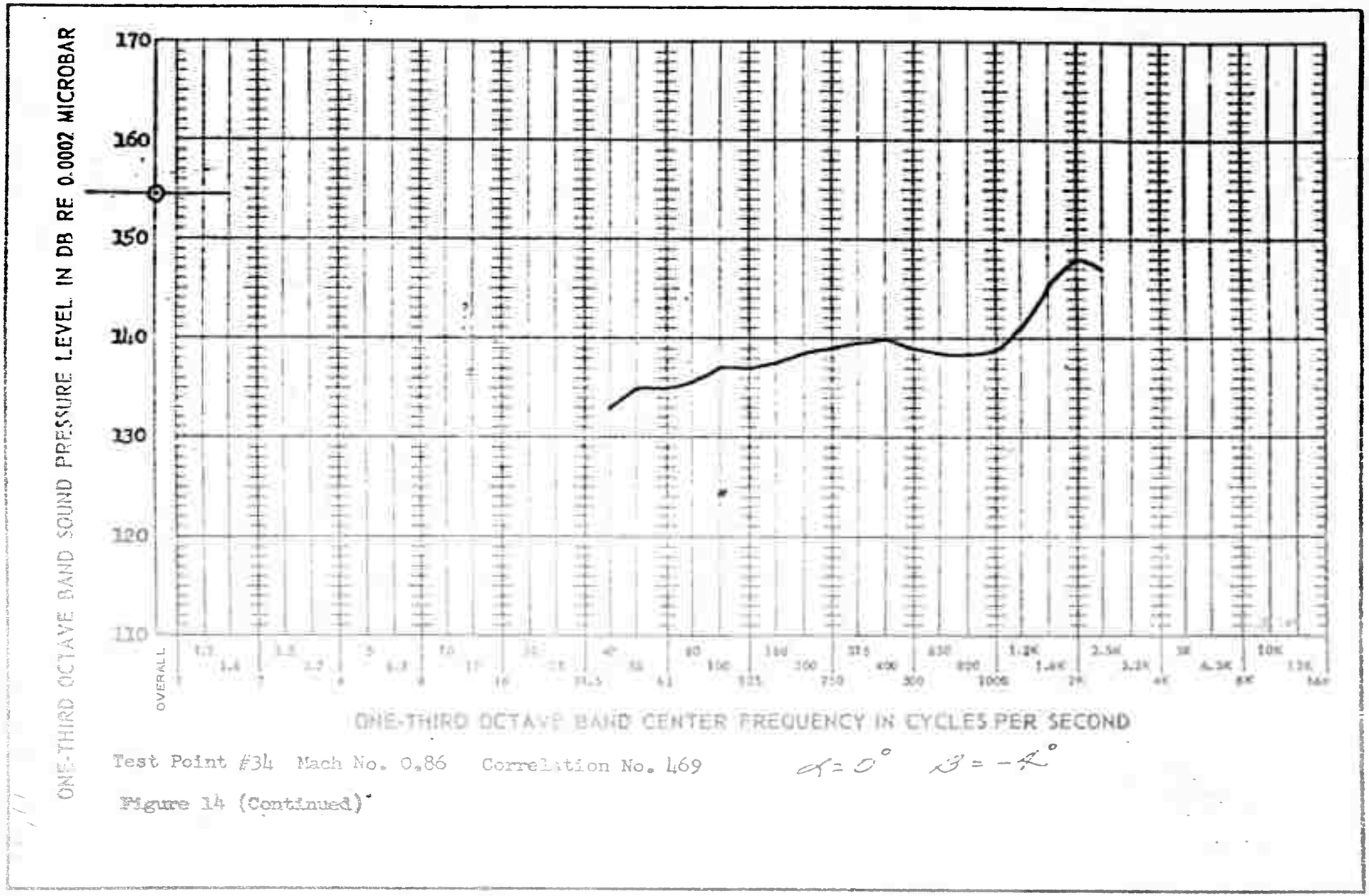
Figure 14 (Continued)



Test Point #31 Mach No. 0.95 Correlation No. 362 α = 0° β = 7°

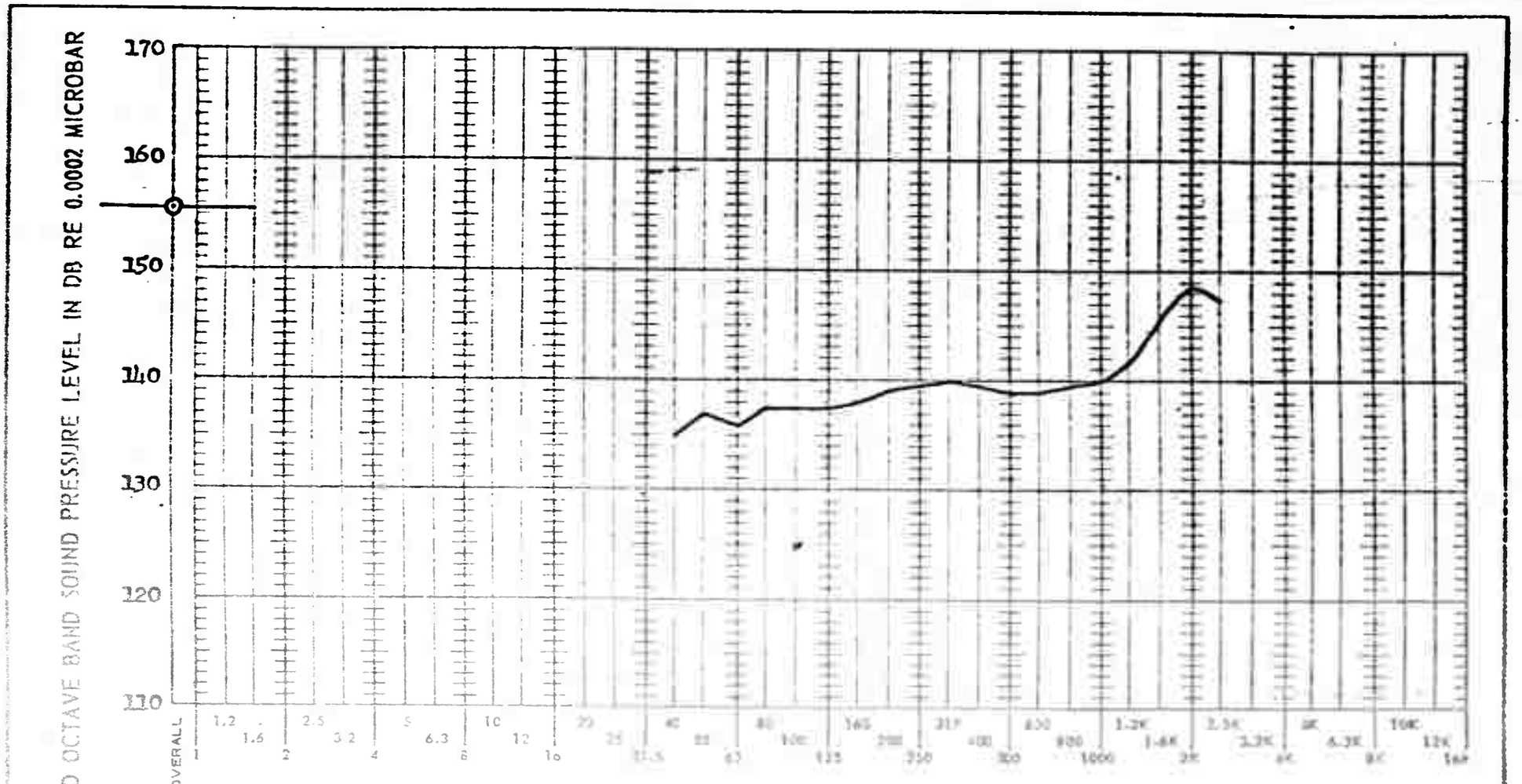
Figure 14 (Continued)

189



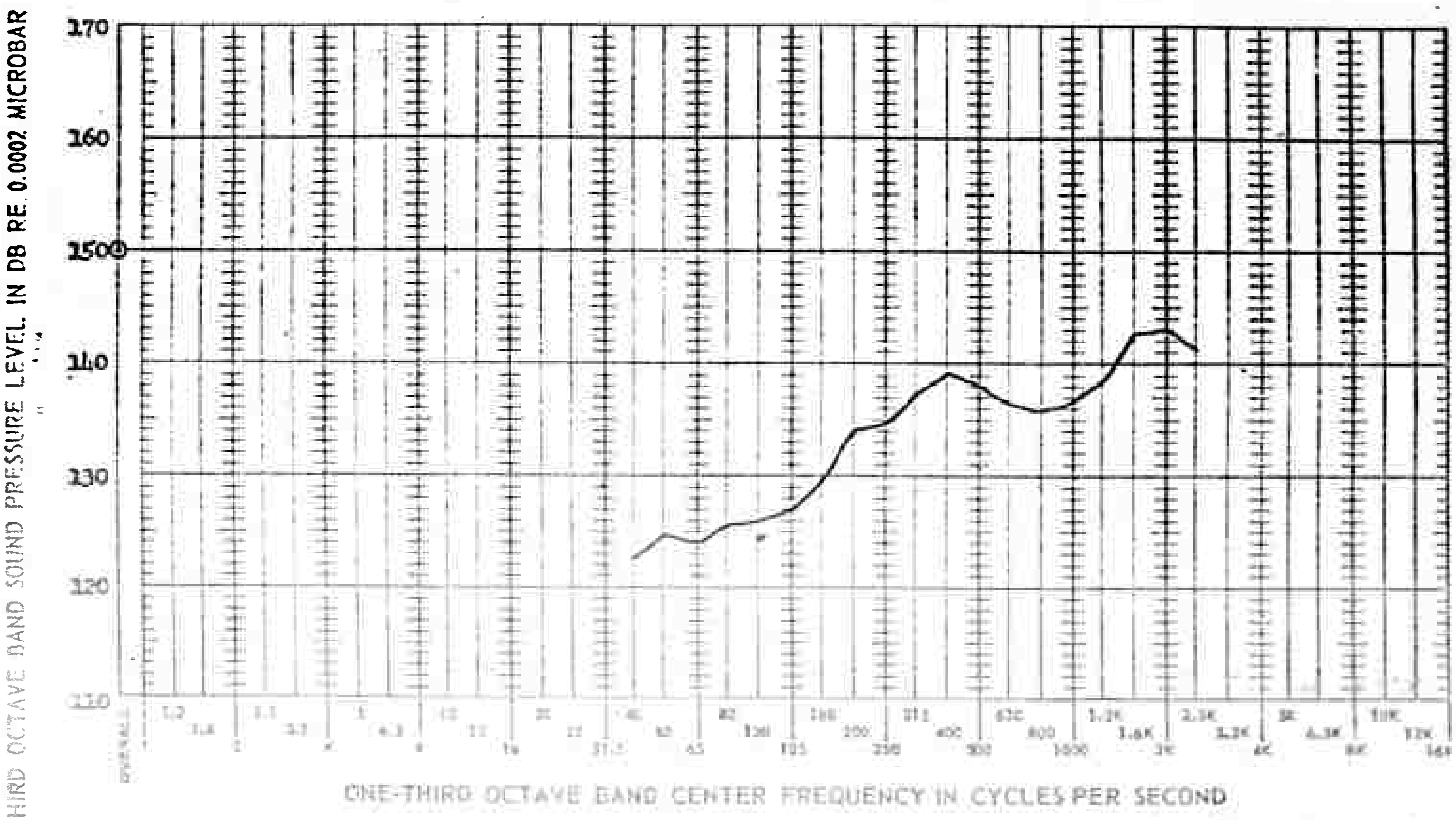
Test Point #34 Mach No. 0.86 Correlation No. 469 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



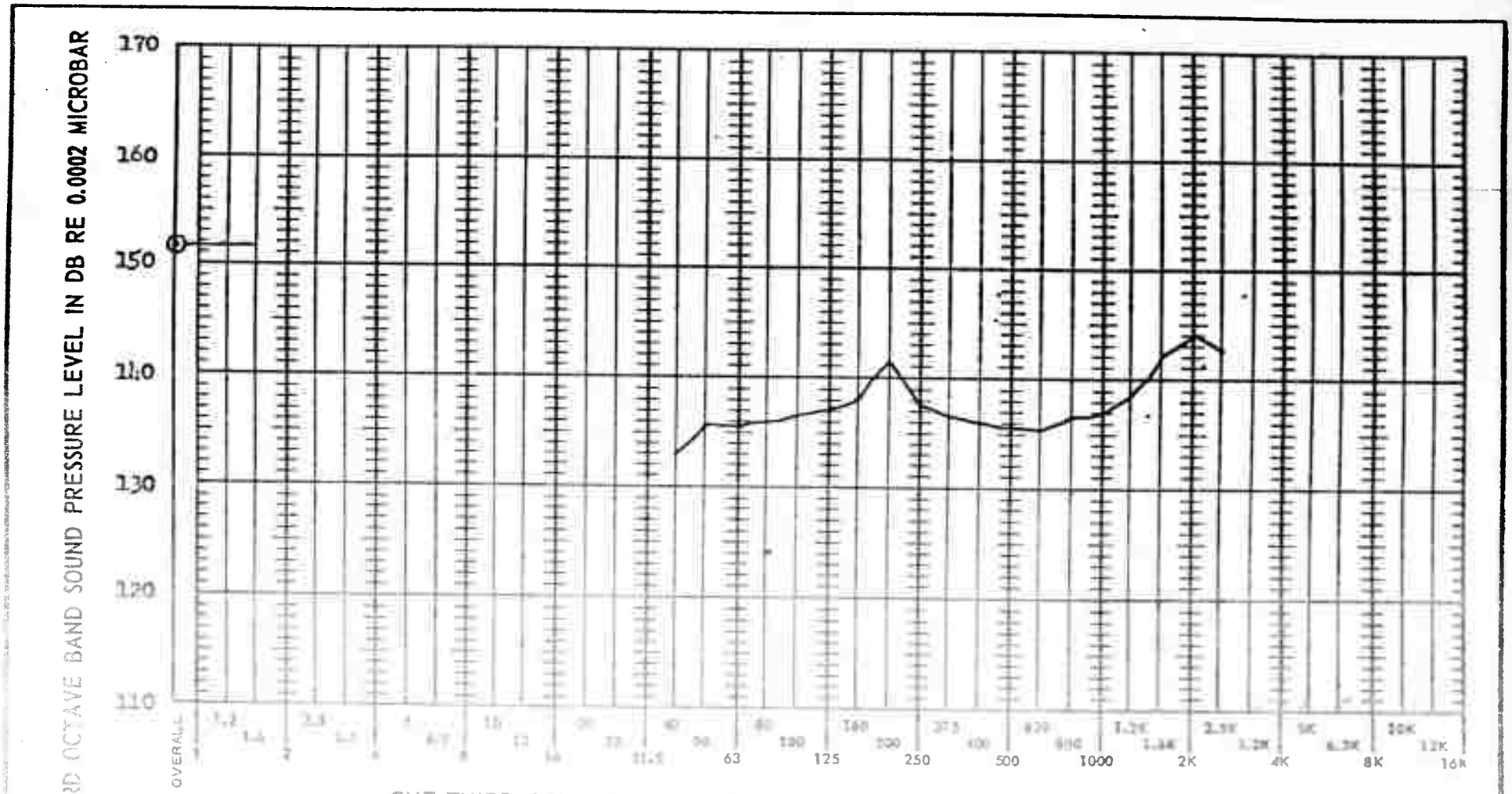
Test Point #34 Mach No. 0.88 Correlation No. 172

Figure 14 (Continued)



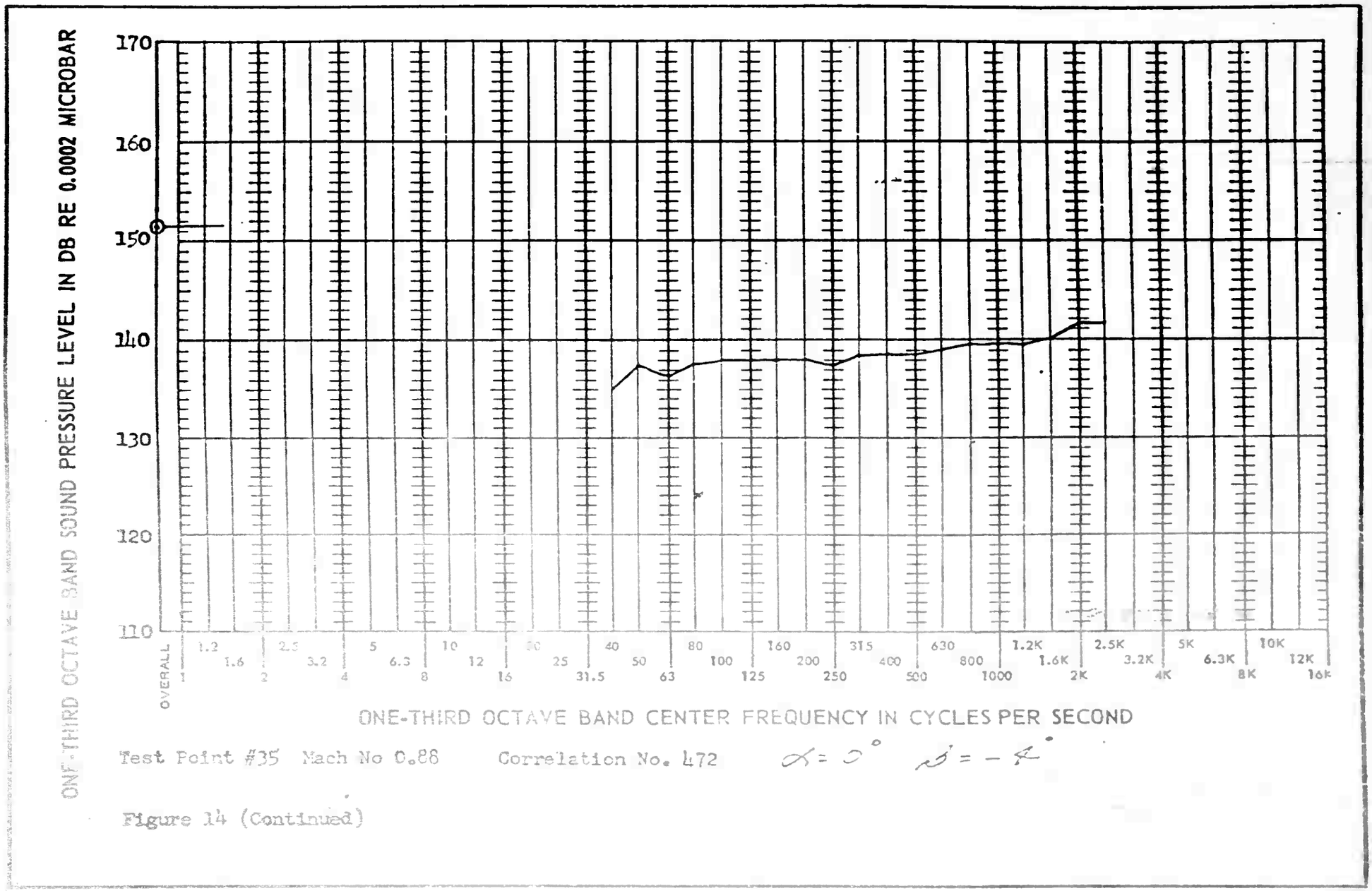
Test Point #35 Mach No. 0.8 Correlation No. 460 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



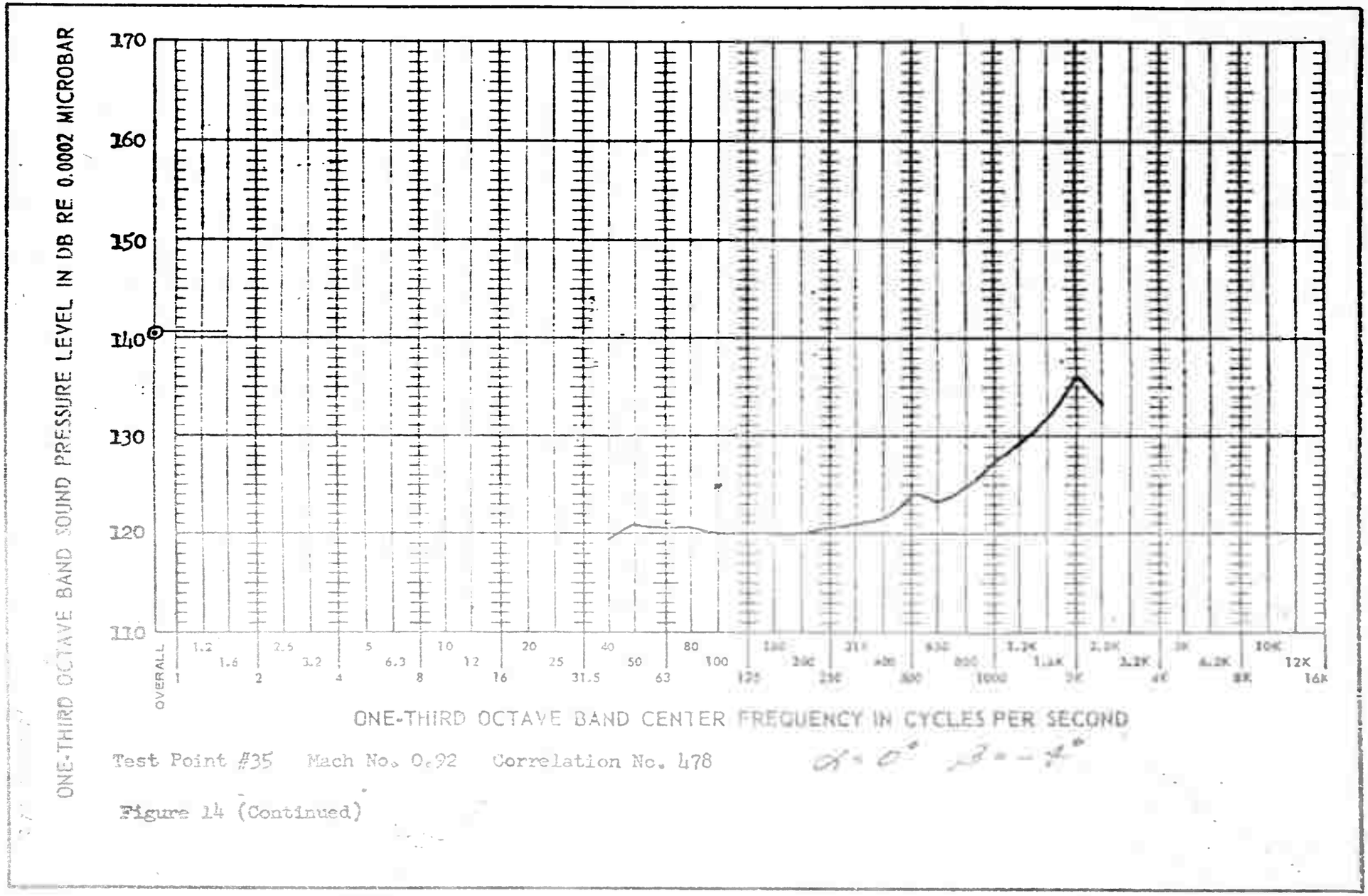
Test Point #35 Mach No. 0.84 Correlation No. 466 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



Test Point #35 Mach No 0.88 Correlation No. 472 $\alpha = 0^\circ$ $\beta = -4^\circ$

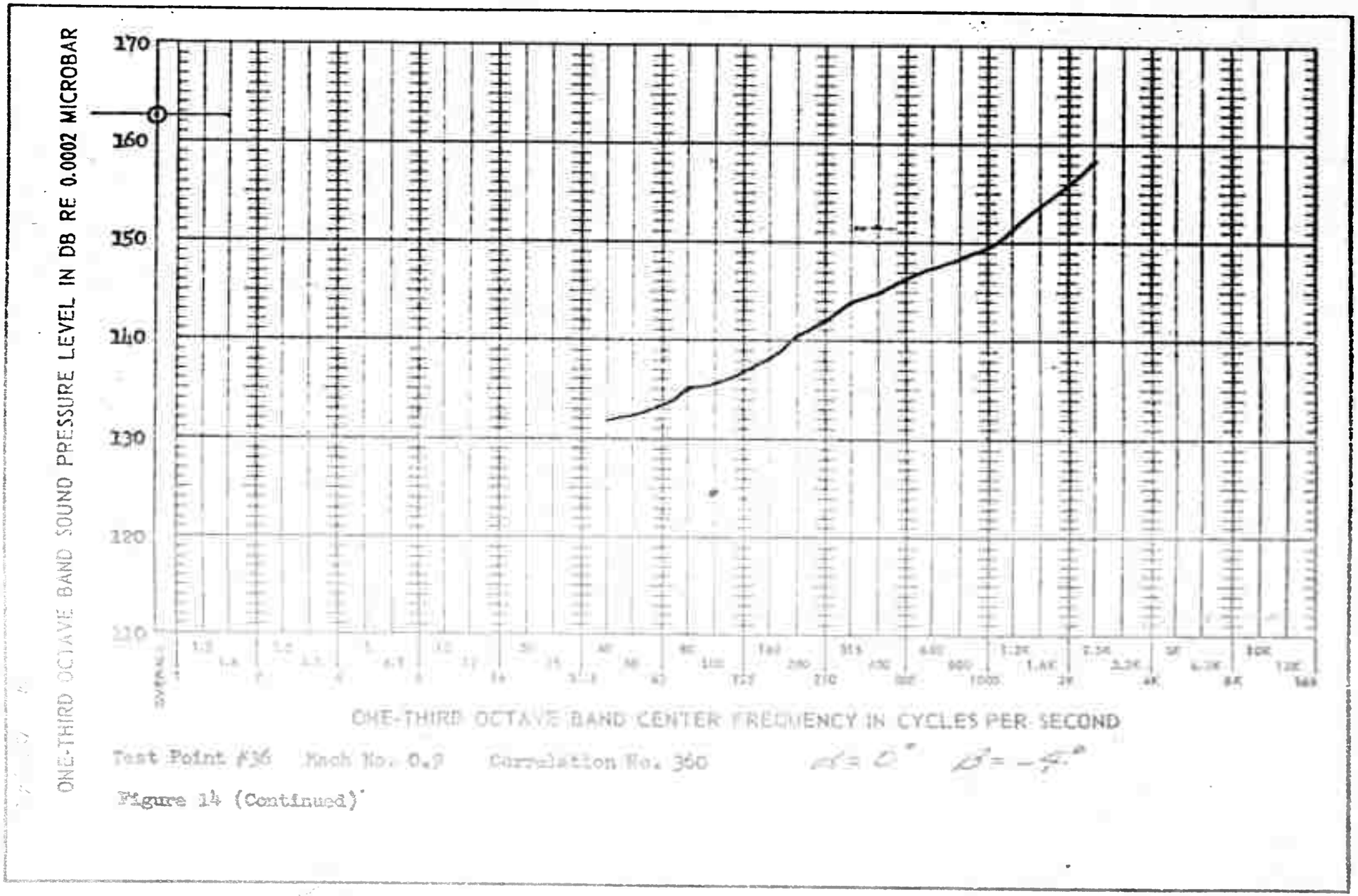
Figure 14 (Continued)



Test Point #35 Mach No. 0.92 Correlation No. 478

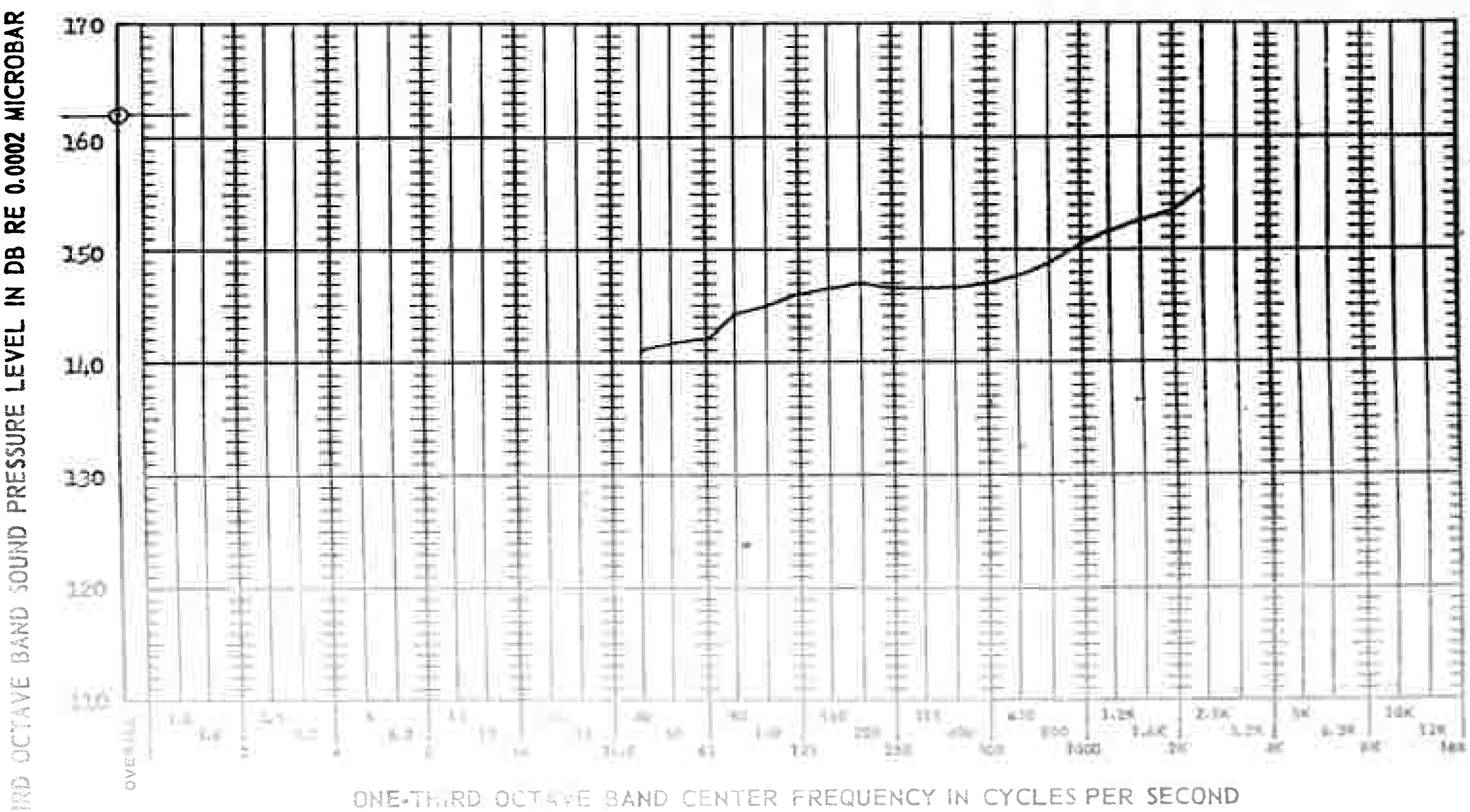
Figure 14 (Continued)

961



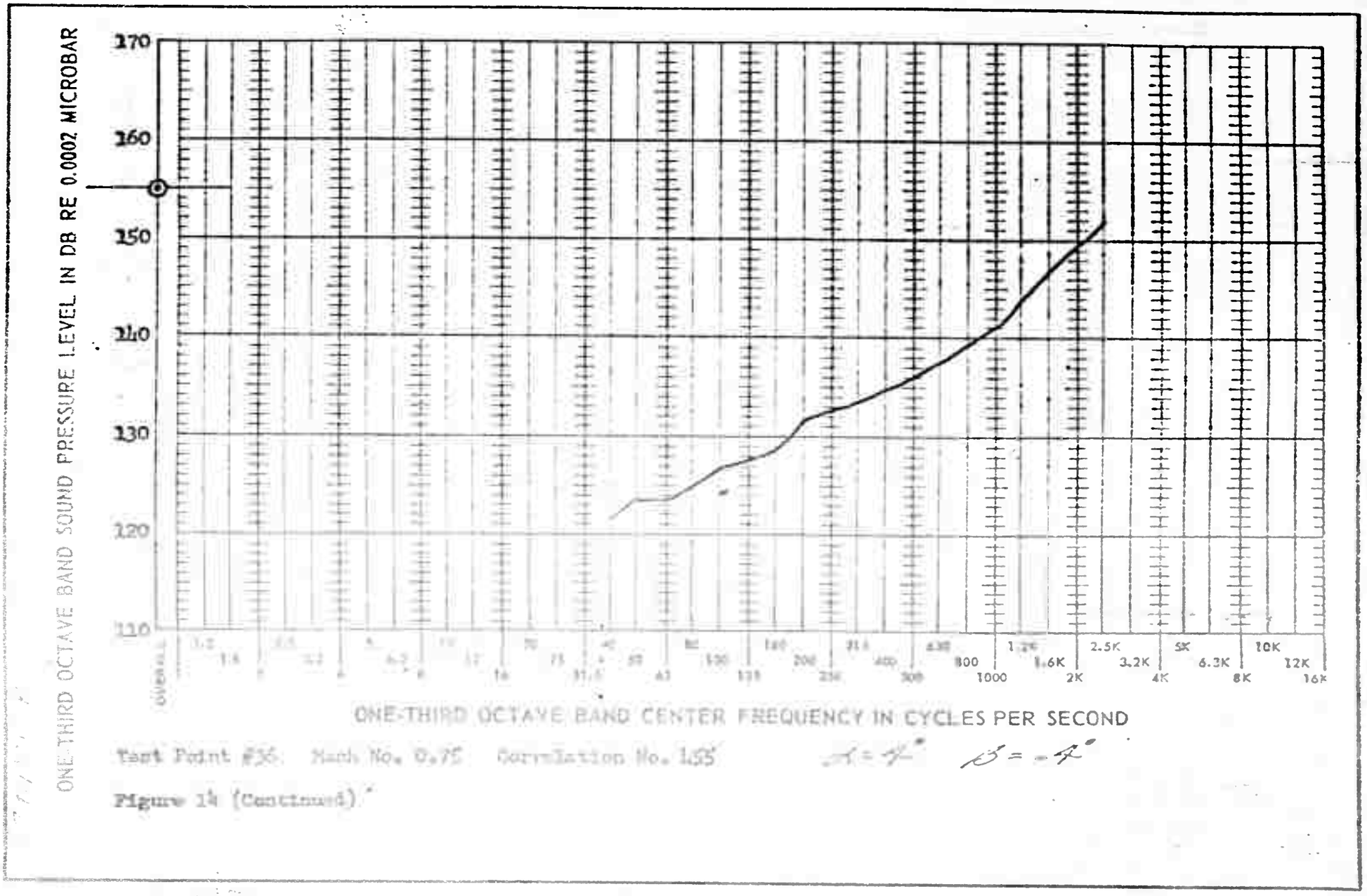
Test Point #36 Mach No. 0.9 Correlation No. 360 $\alpha = 0°$ $\beta = -5°$

Figure 14 (Continued)



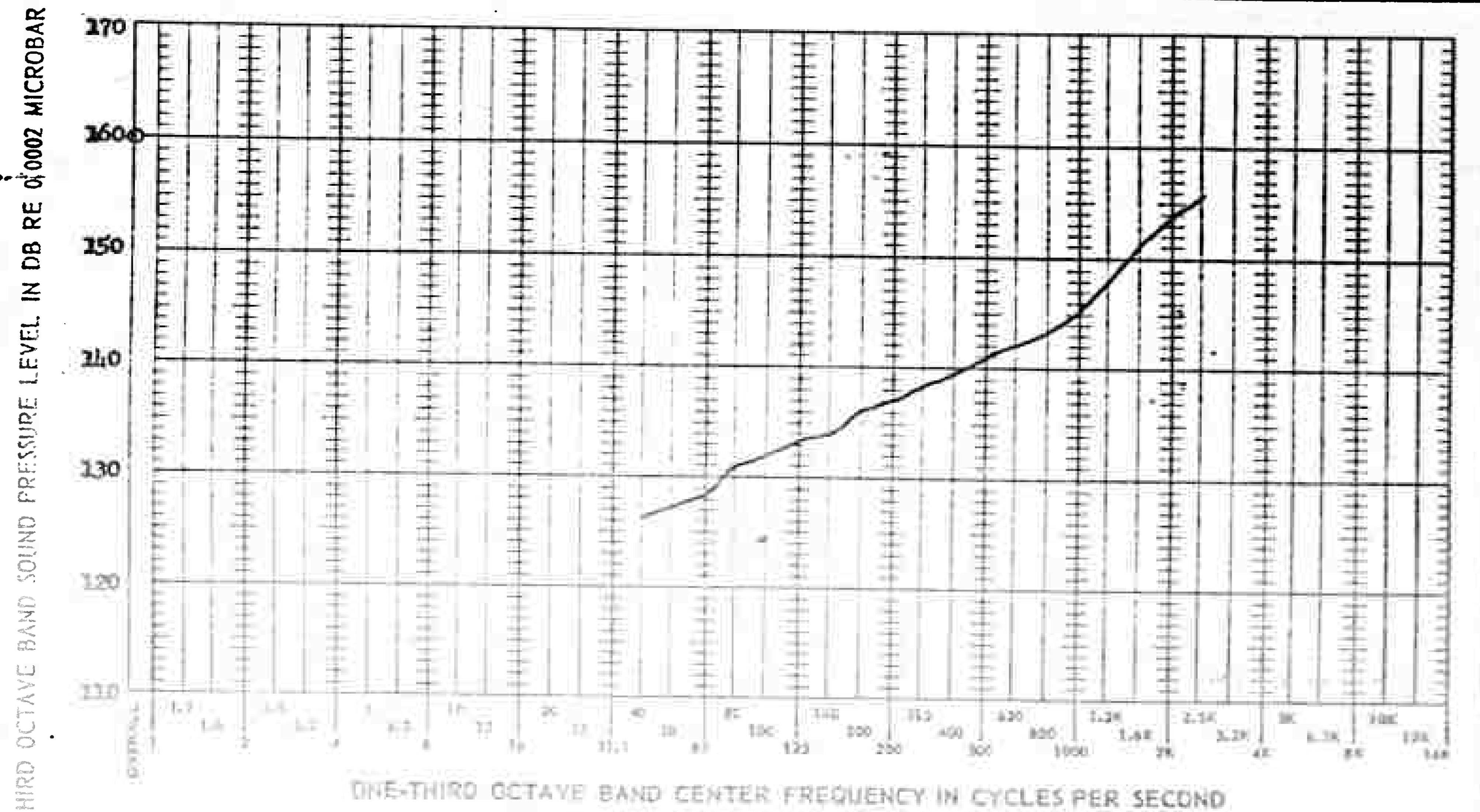
Test Point #36 Mach No. 0.95 Correlation No. 361 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



Test Point #36. Mach No. 0.75 Correlation No. 155 $\alpha = 4°$ $\beta = -2°$

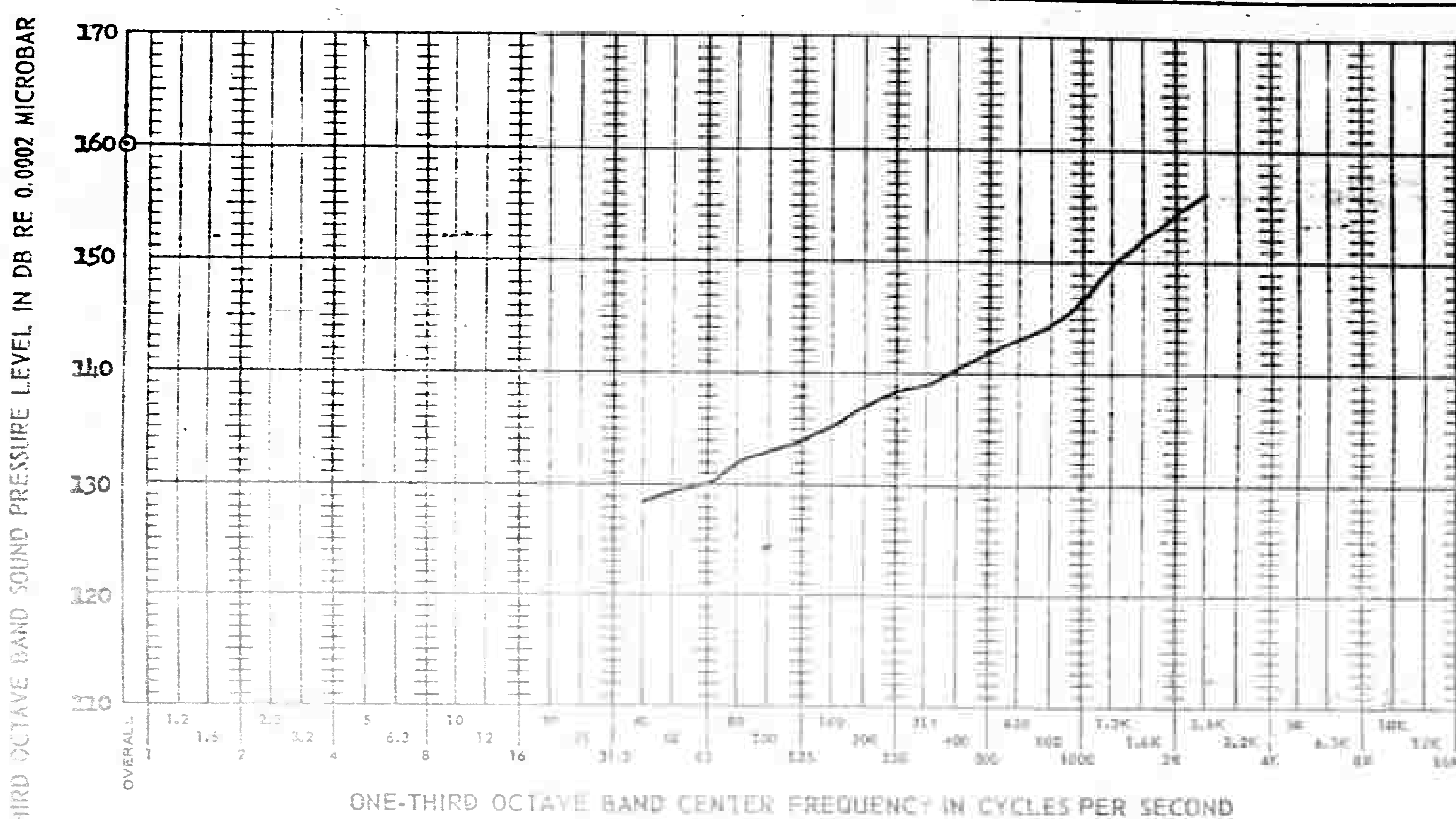
Figure 14 (Continued).



Test Point #36 Mach No. 0.82 Correlation No. 462 α = 4° β = -4°

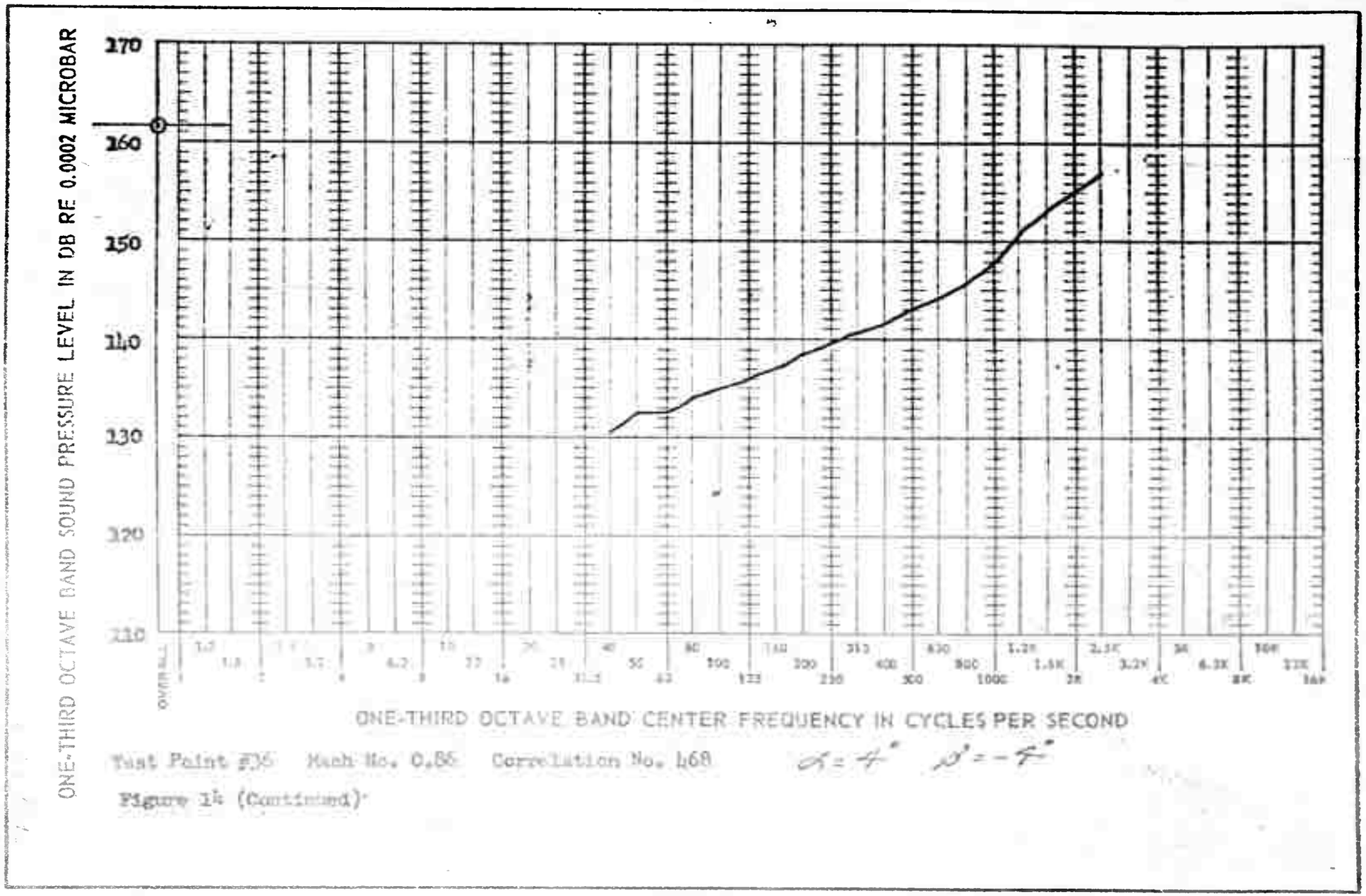
Figure 14 (Continued)

200



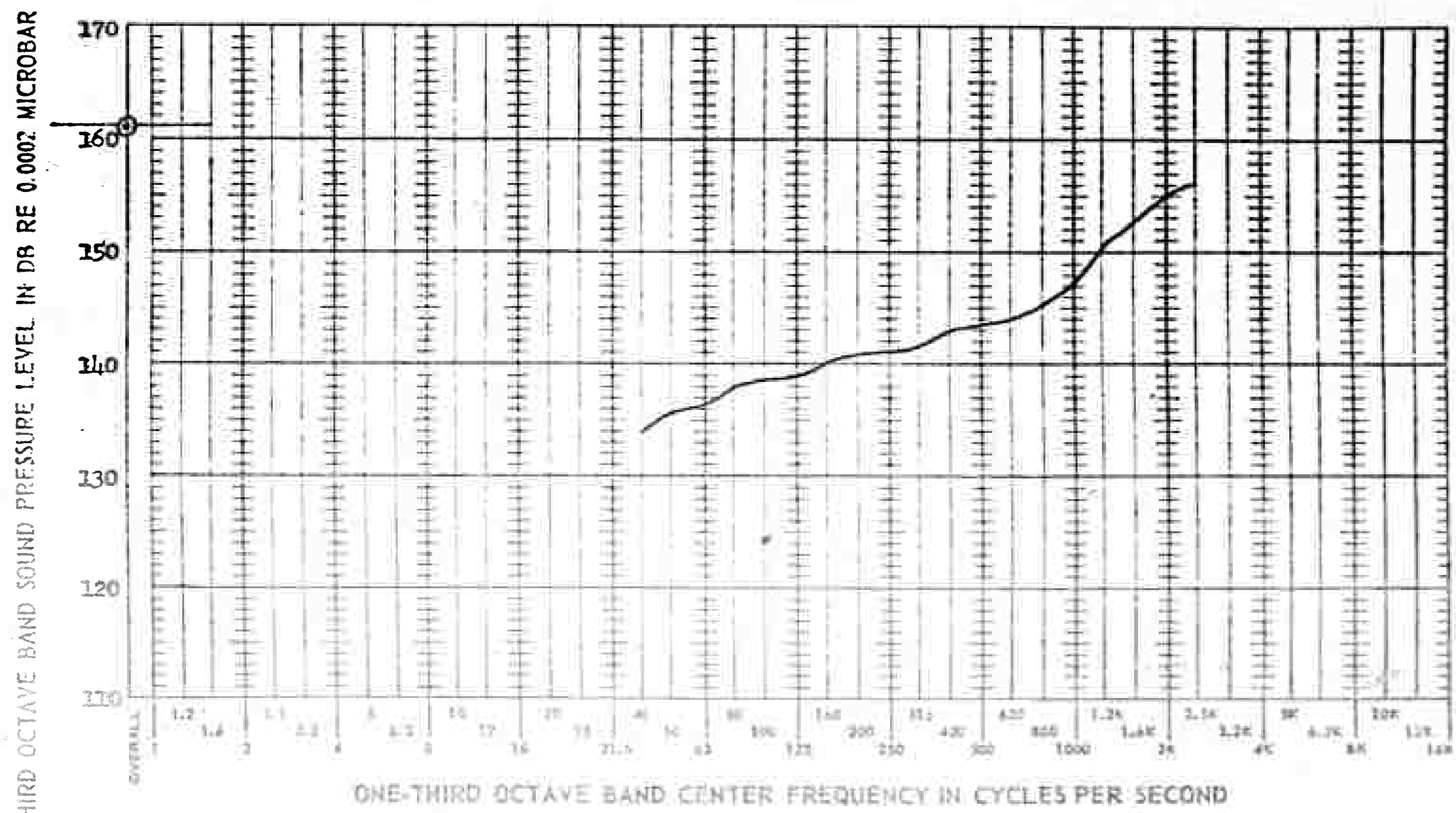
Test Point #36 Mach No. 0.84 Correlation No. 467 α = 4° β = -4°

Figure 14 (Continued)



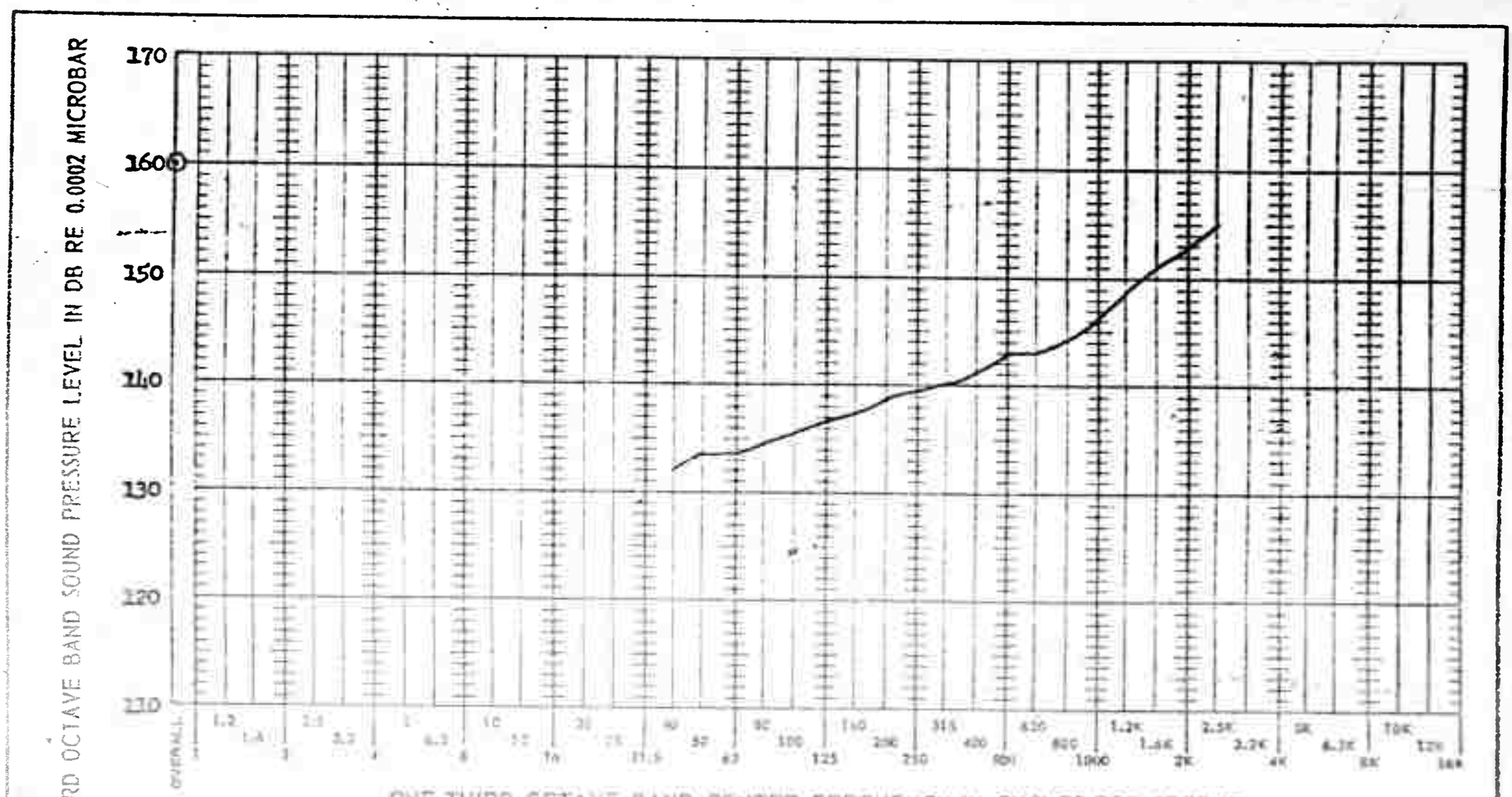
Test Point #36 Mach No. 0.86 Correlation No. 468 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



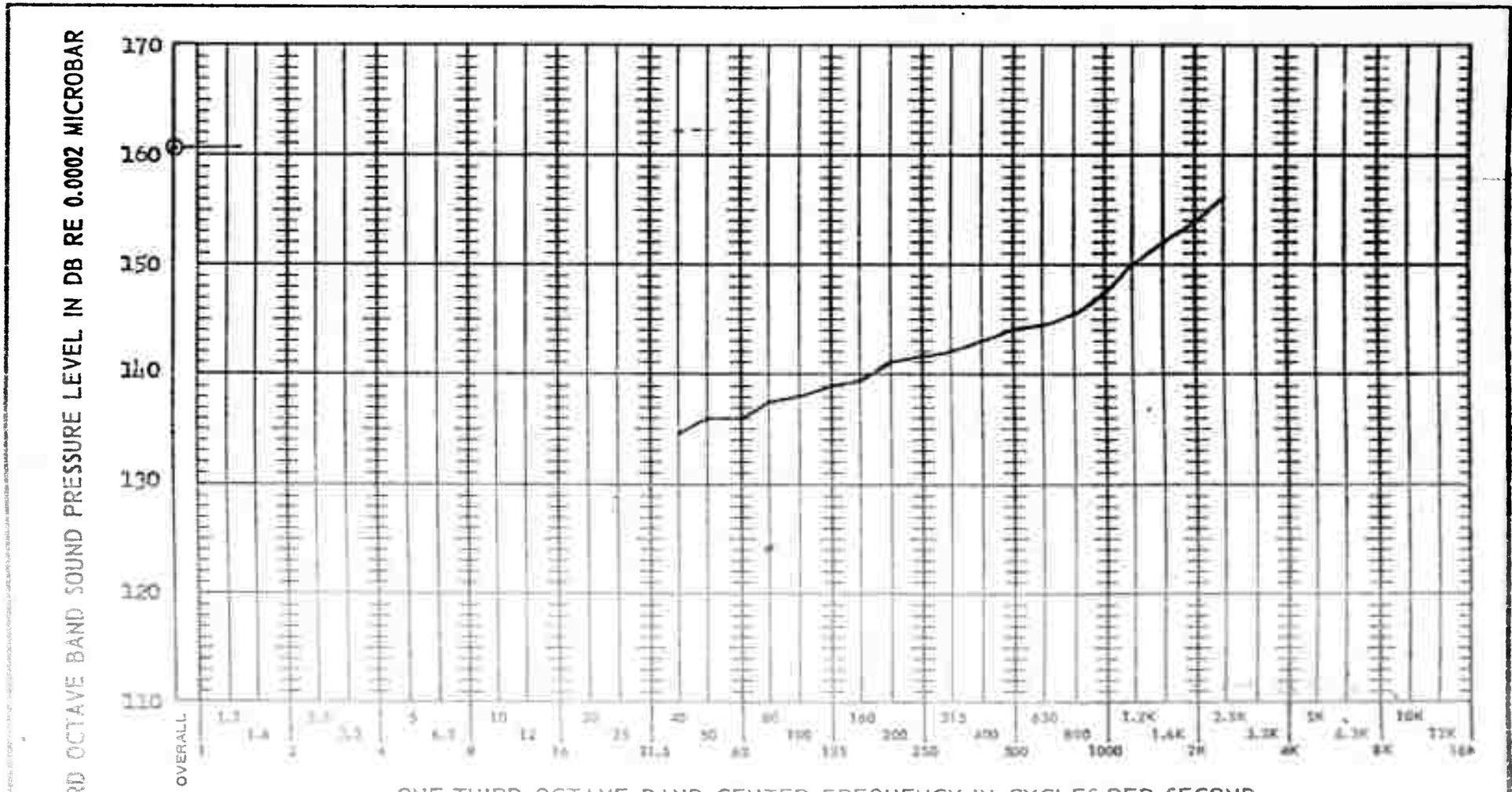
Test Point #35 Mach No. 0.86 Correlation No. 167 α = 0° β = -4°

Figure 14 (Continued)



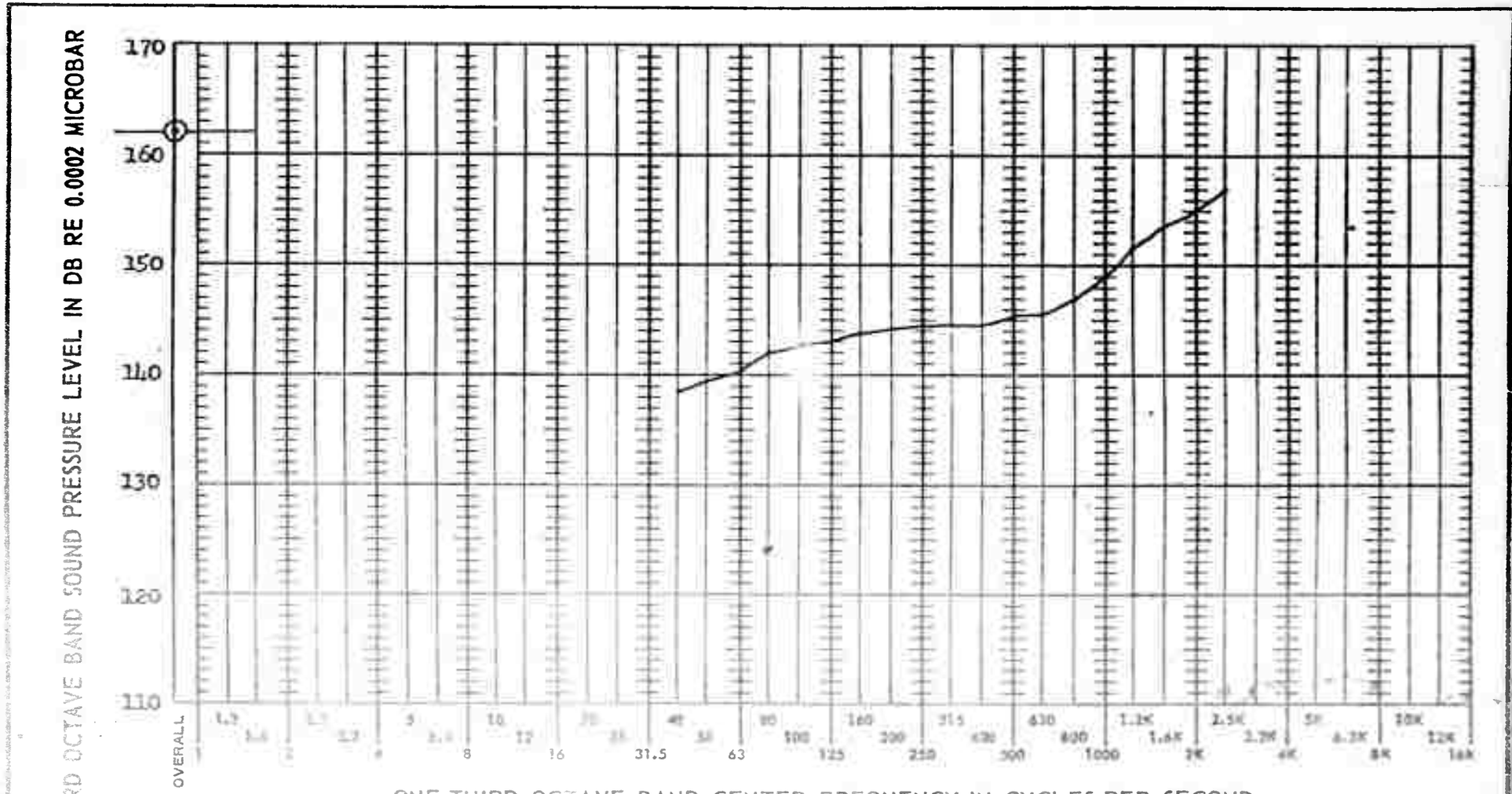
Test Point #36 Mach No. 0.86 Correlation No. 470 $\alpha = -7$ $\beta = -4$

Figure 14 (Continued)



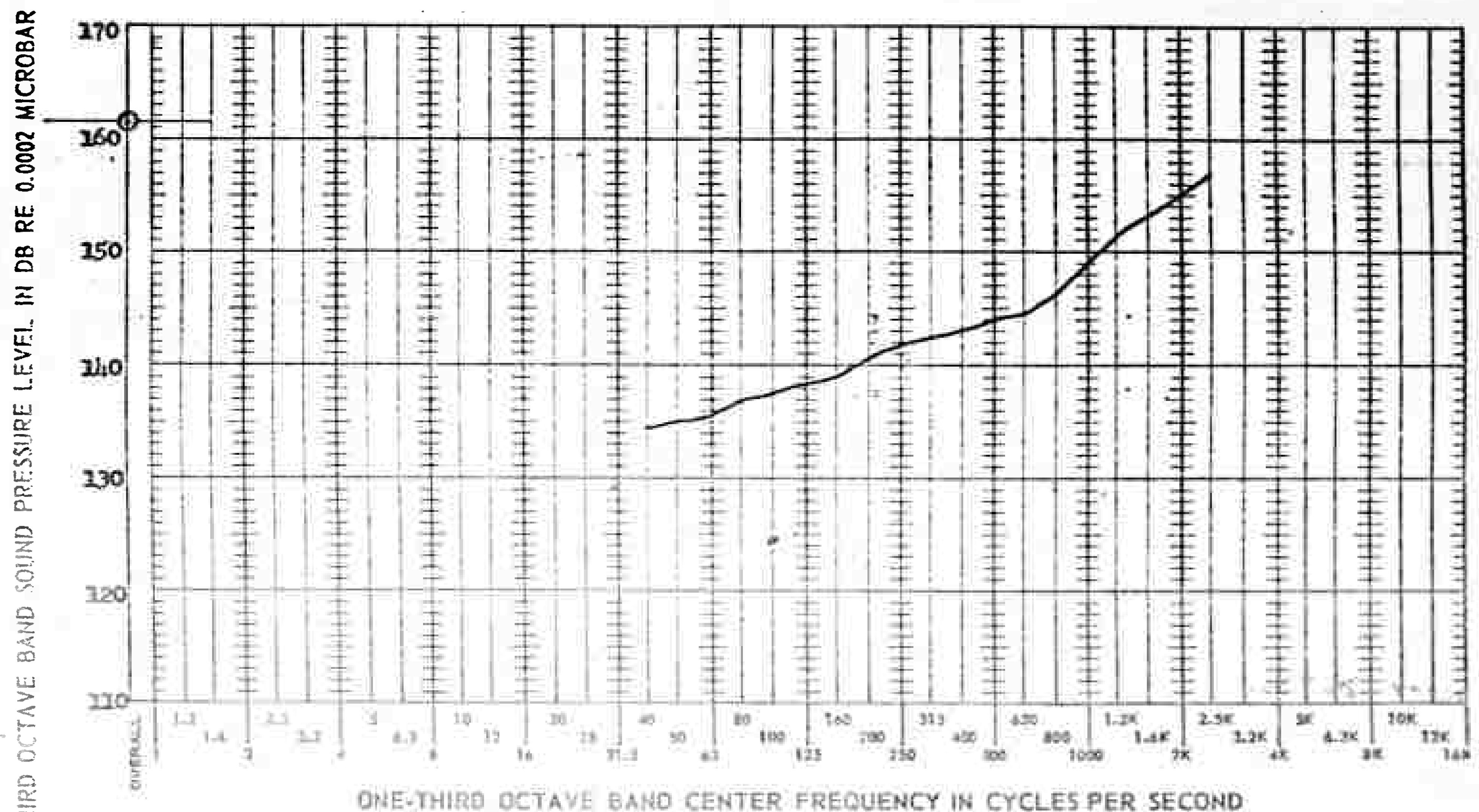
Test Point #36 Mach No. 0.88 Correlation No. 471 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



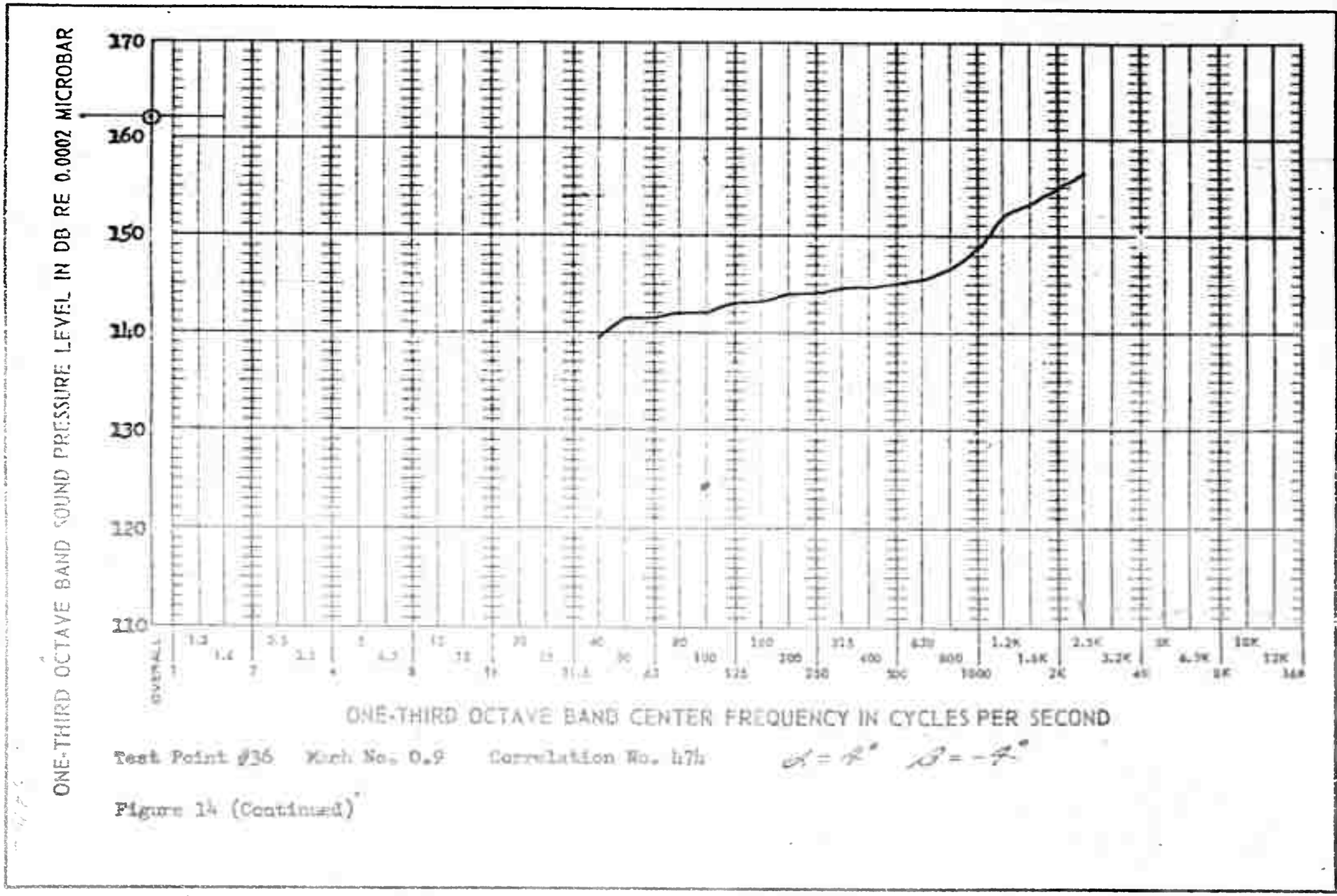
Test Point #36 Mach No. 0.88 Correlation No. 472 $\alpha = 0^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



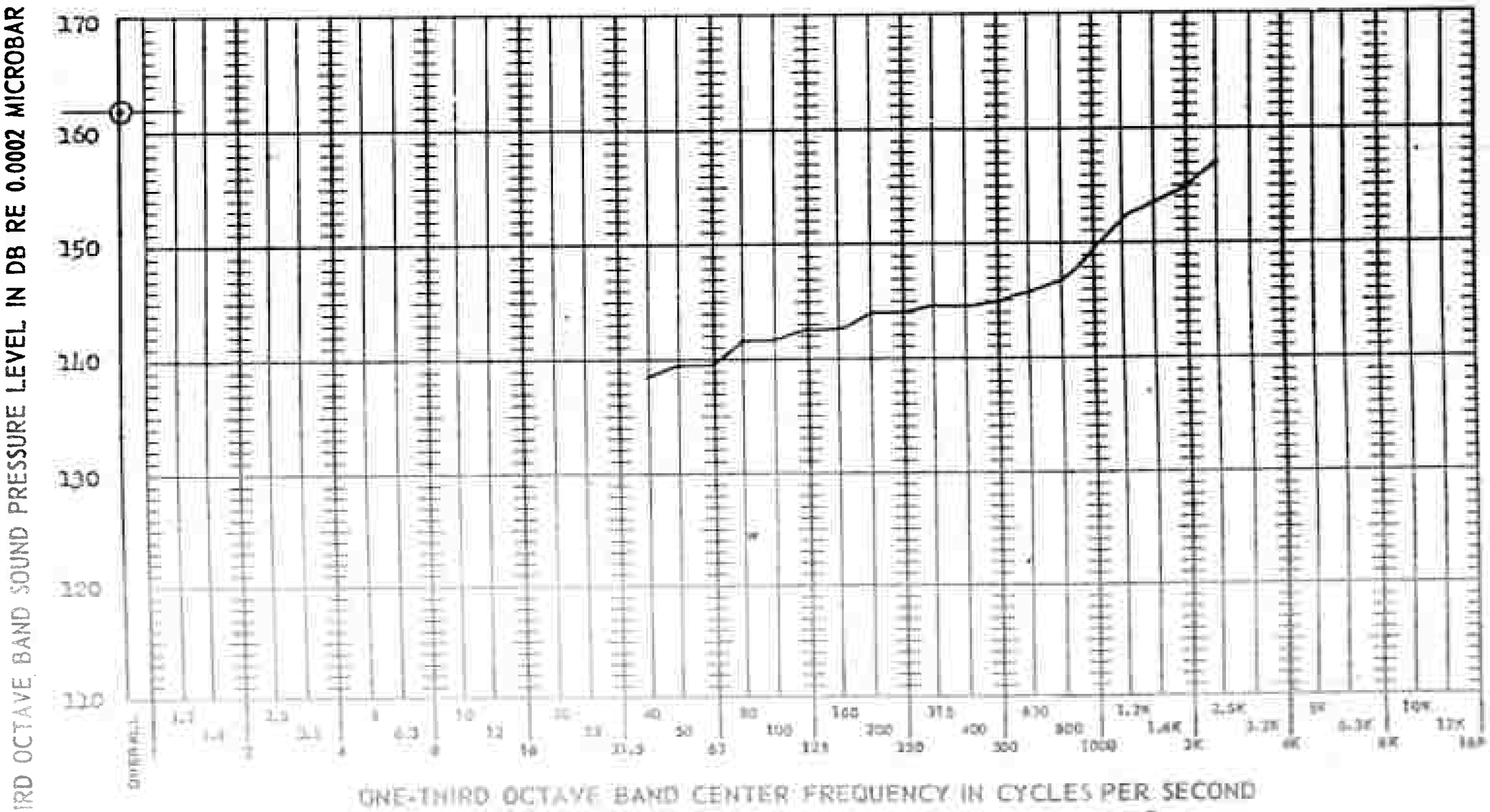
Test Point #36 Mach No. 0.88 Correlation No. 473 $\alpha = 4°$ $\beta = -4°$

Figure 14 (Continued)



Test Point #36 Mach No. 0.9 Correlation No. 47h $\alpha = \alpha^\circ$ $\beta = -\beta^\circ$

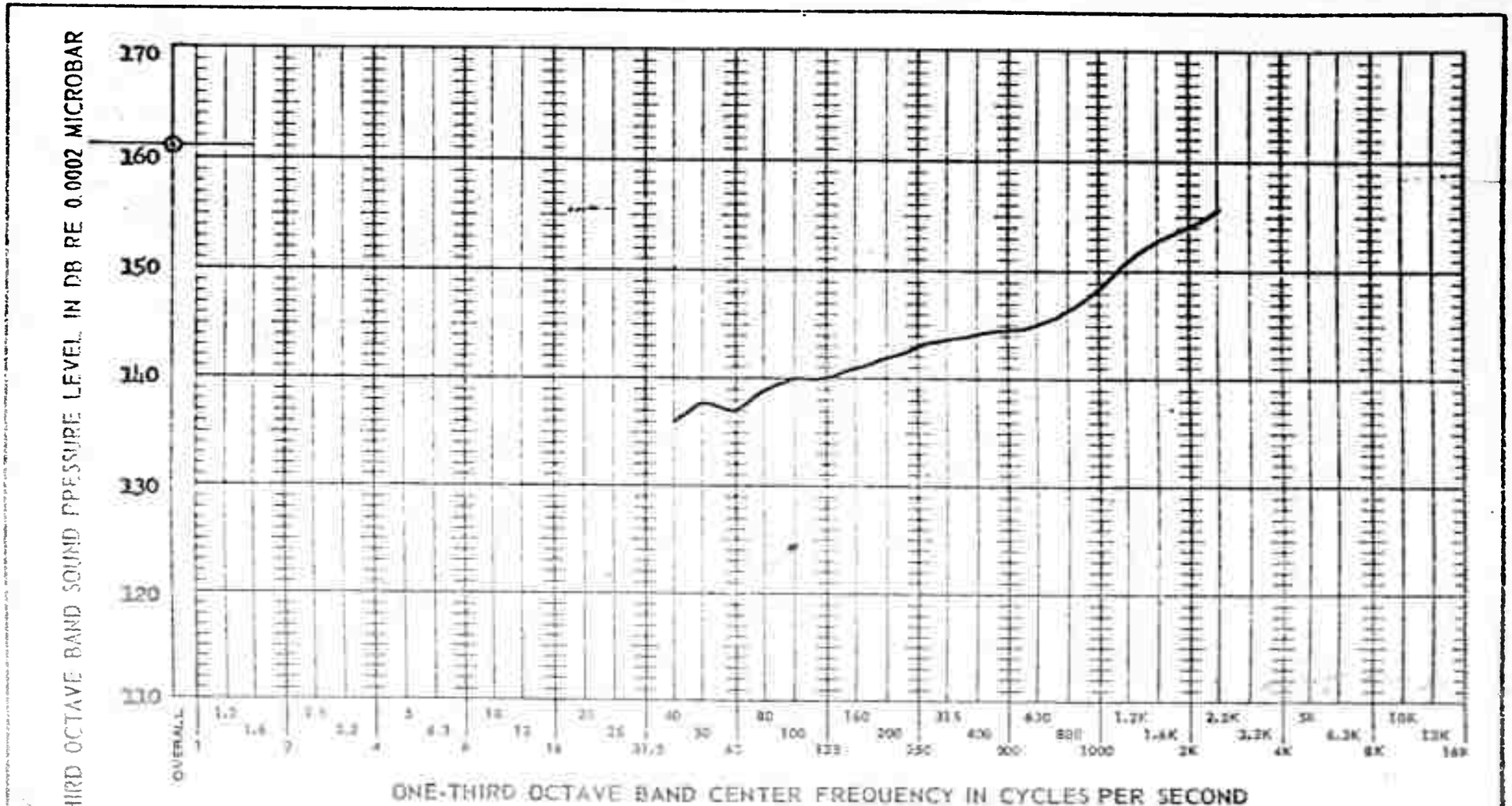
Figure 14 (Continued)



Test Point #36 Mach No. 0.9 Correlation No. 175

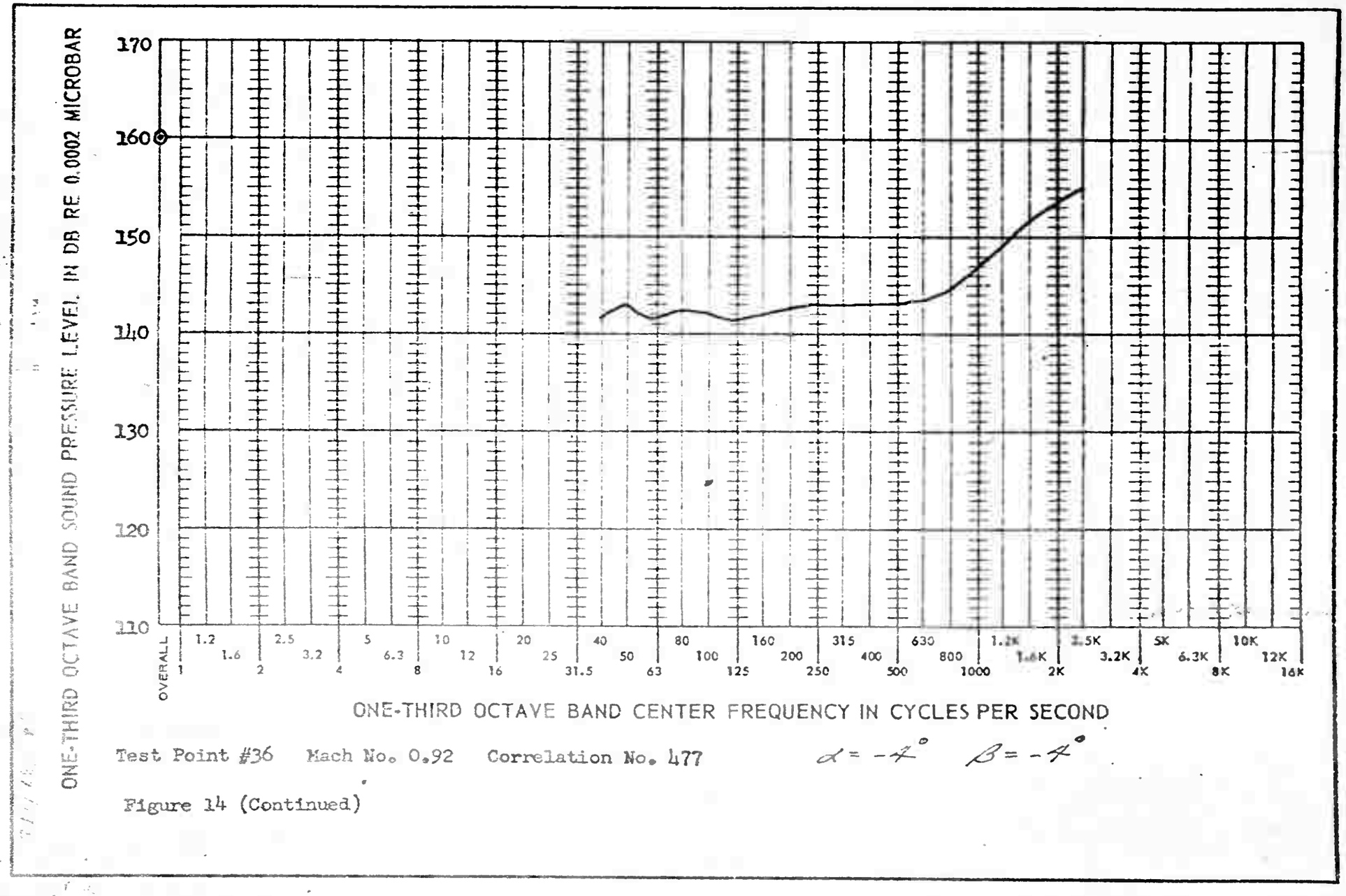
Figure 14 (Continued)

208



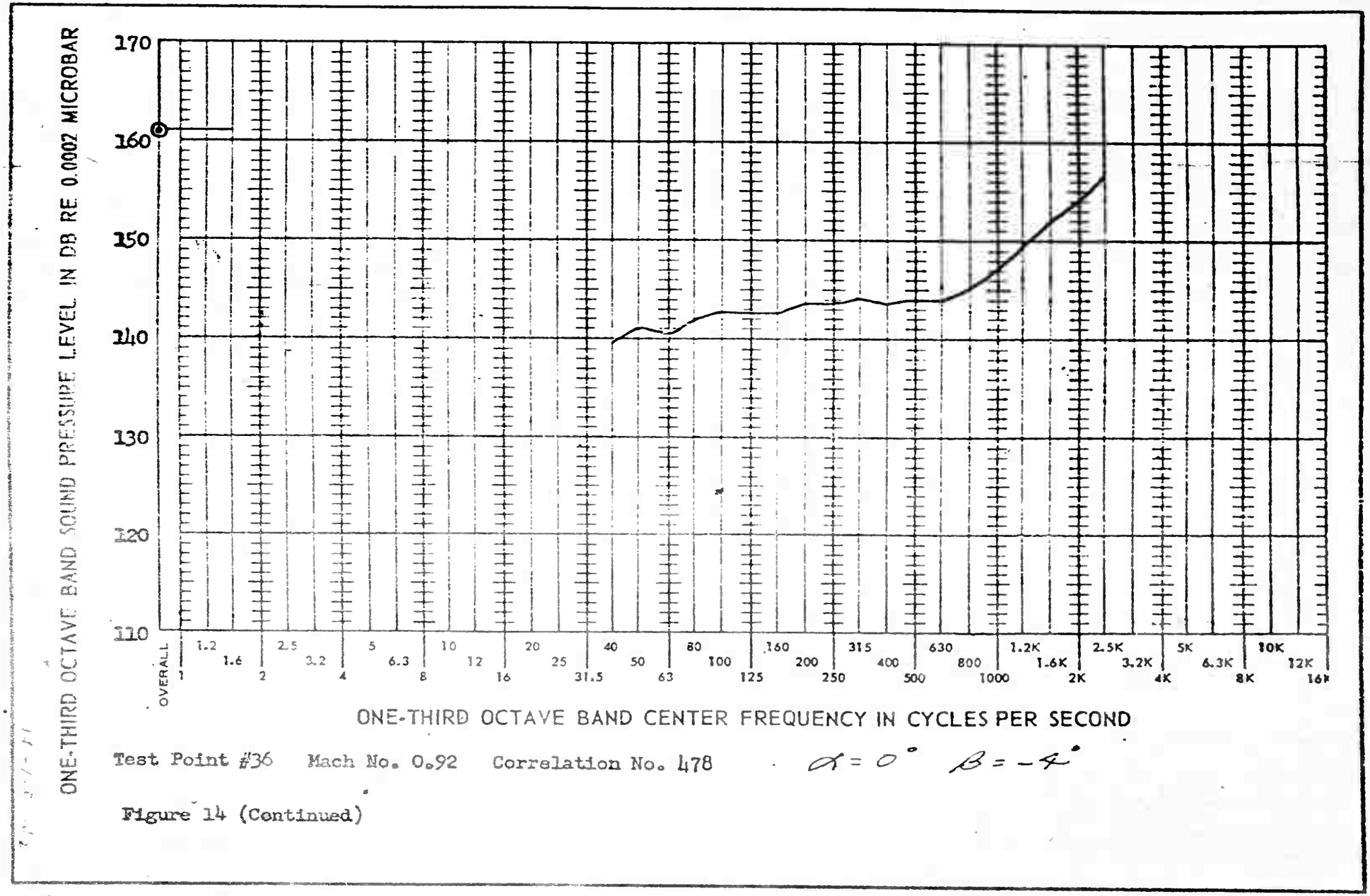
Test Point #36 Mach No. 0.9 Correlation No. 476 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)



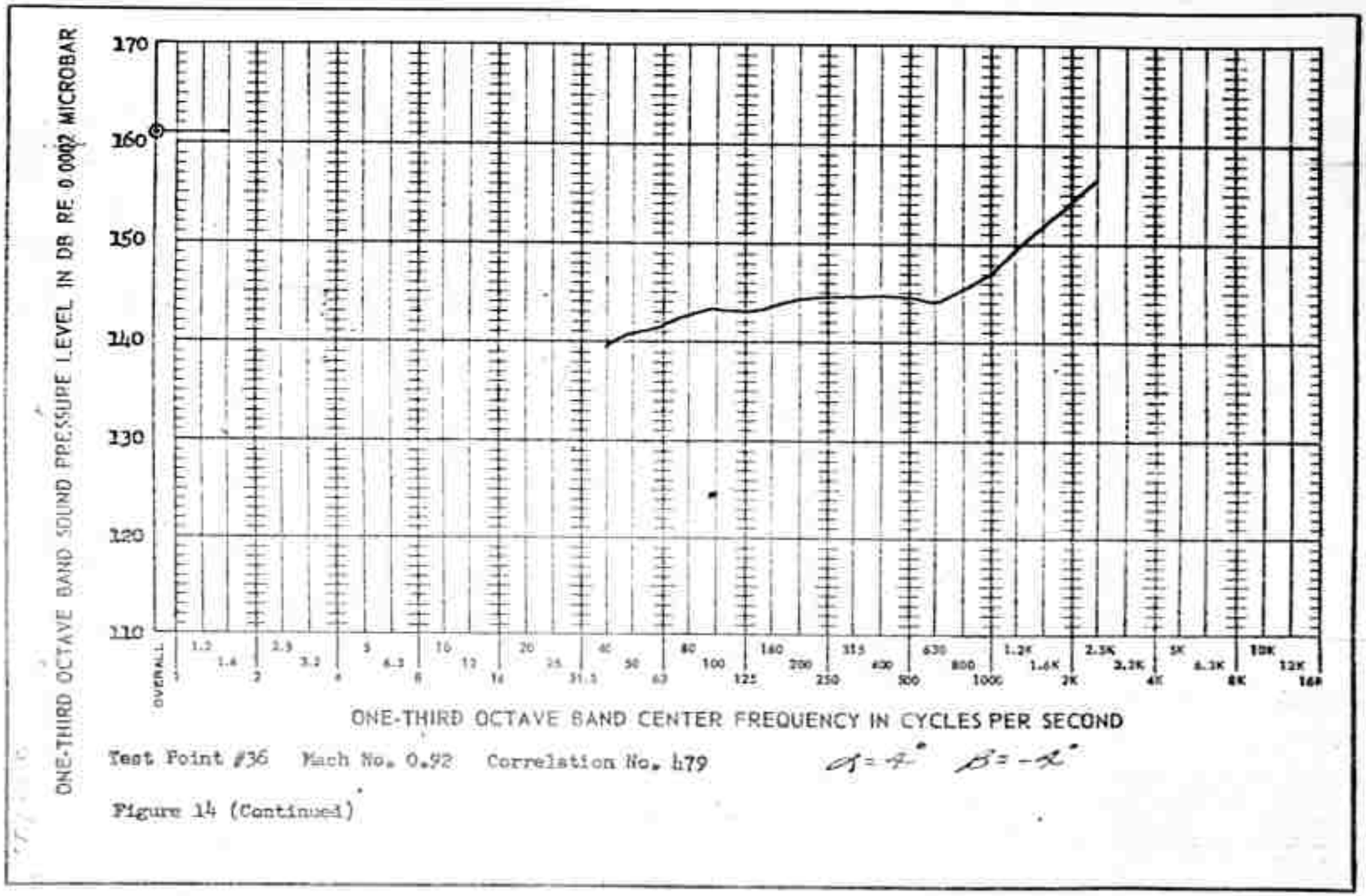
Test Point #36 Mach No. 0.92 Correlation No. 477 $\alpha = -4^\circ$ $\beta = -4^\circ$

Figure 14 (Continued)



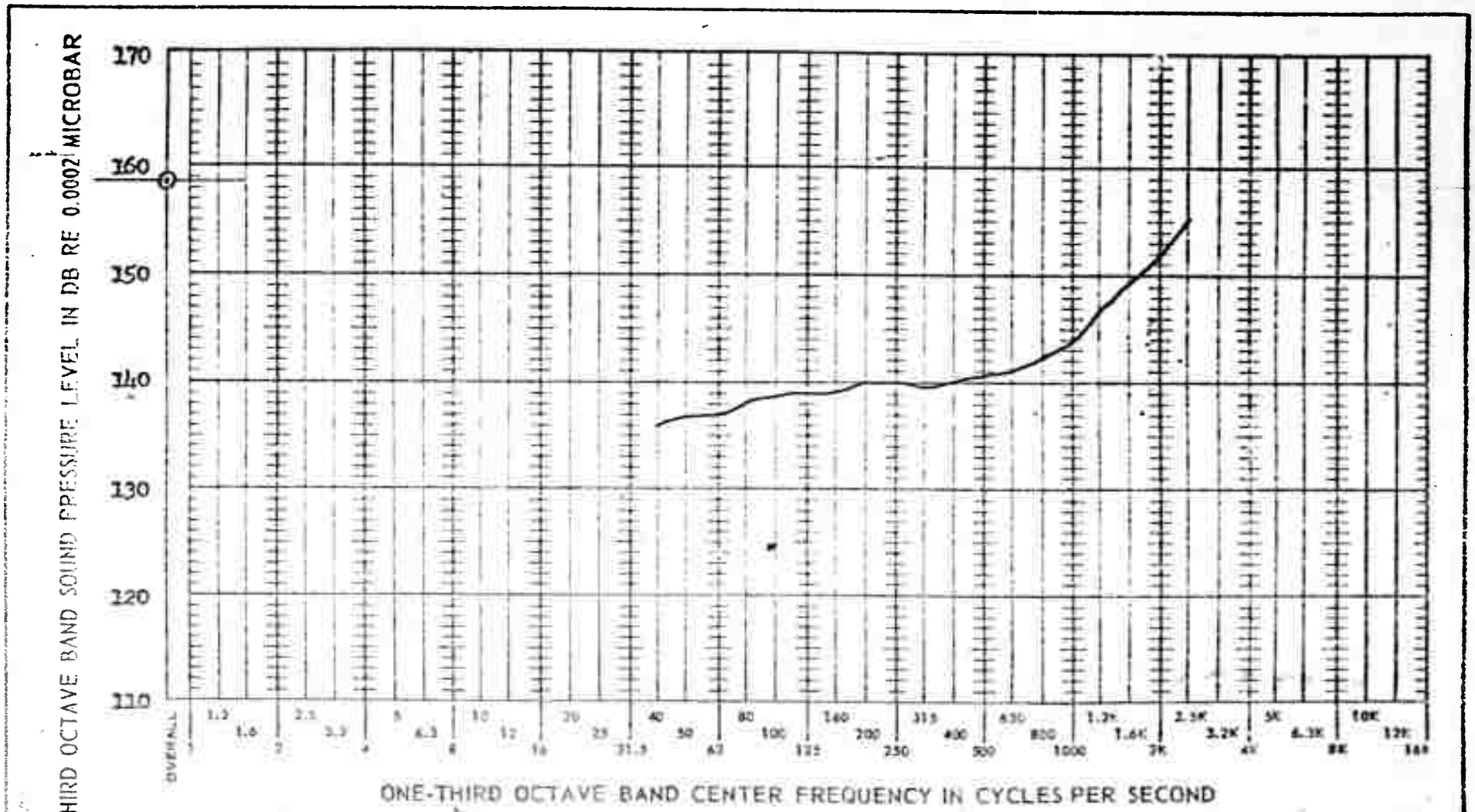
Test Point #36 Mach No. 0.92 Correlation No. 478 $\alpha = 0°$ $\beta = -4°$

Figure 14 (Continued)



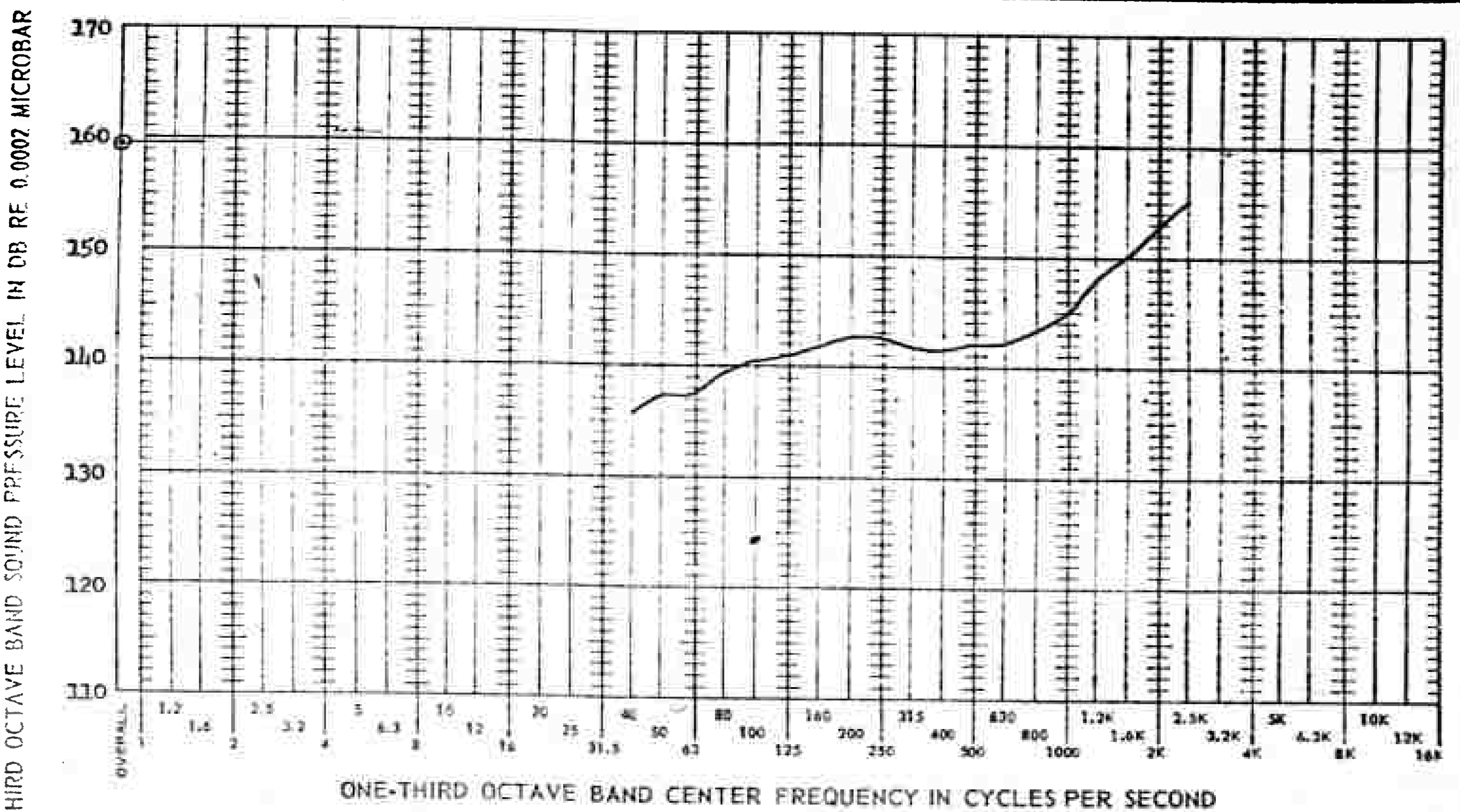
Test Point #36 Mach No. 0.92 Correlation No. 479 $\alpha = 4^\circ$ $\beta = -2^\circ$

Figure 14 (Continued)



Test Point #36 Mach No. 0.94 Correlation No. 461 $\alpha = 0°$ $\beta = -4°$

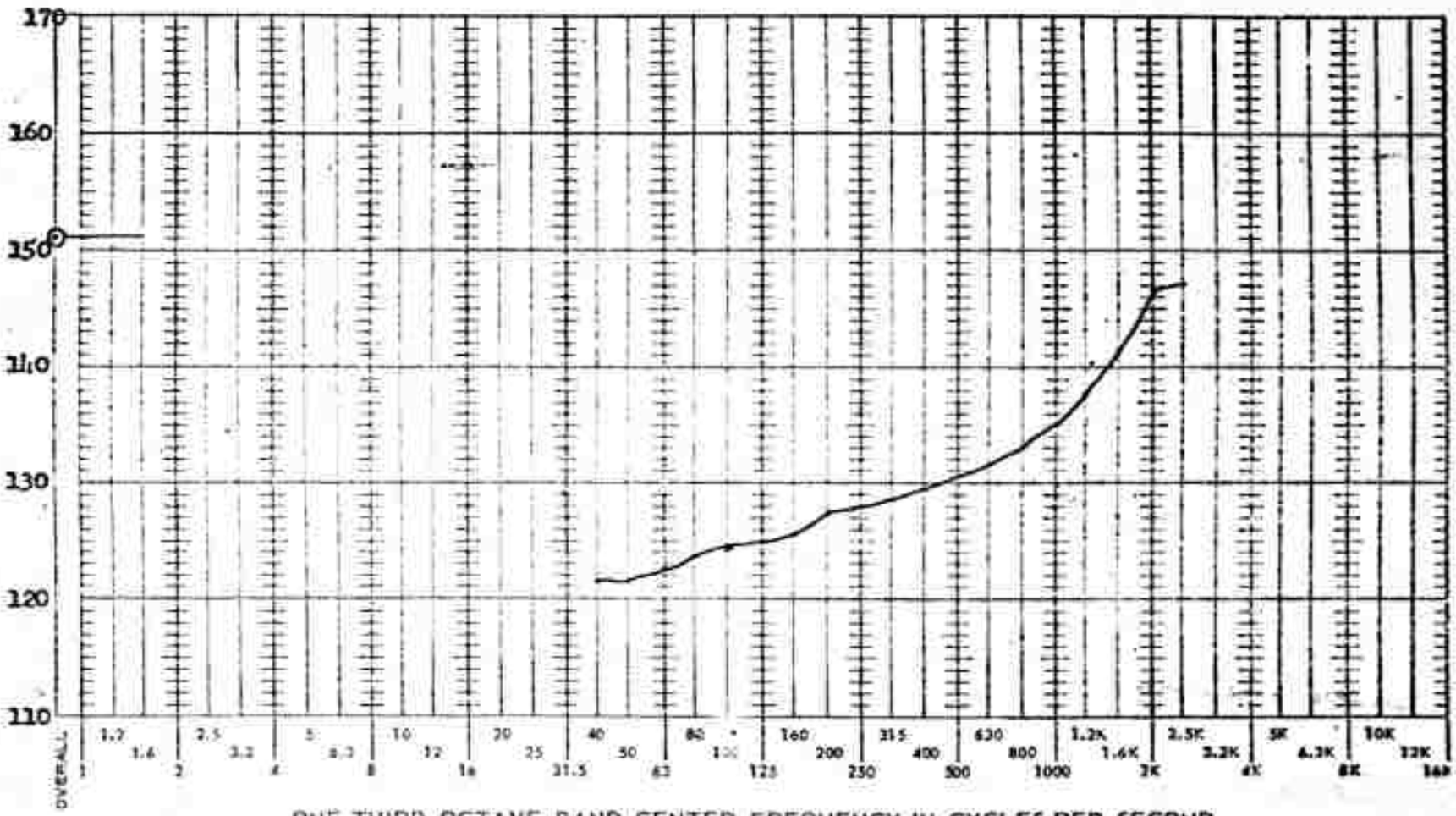
Figure 14 (Continued)



Test Point #36 Mach No. 0.94 Correlation No. 482 $\alpha = -4°$ $\beta = -4°$

Figure 14 (Continued)

214



Test Point #36 Mach No. 0.96 Correlation No. 485 $\alpha = 4^\circ$ $\beta = -2^\circ$

Figure 14. One-third octave band sound pressure levels. (Concluded)

Table VII. OVERALL SOUND PRESSURE LEVEL

db RE: .0002 Microbars

*See Text

Correlation No.							301	302	303	304	305	306	307	308	309
Mach No.							0.6	0.7	0.75	0.8	0.8	0.8	0.85	0.85	0.85
α							0	0	0	0	+4	-4	-4	0	+4
β							0	0	0	0	0	0	0	0	0
Transducer Location															
1															
2															
3											153.5*				156.0*
4															
5															
6															
7															
8															
9															
12															
14															
15															
16															
18															
20															
21															
23															
26															
27															
28															
29															
30															
31															
32															
33															
34															
35															
36															

Table VII. OVERALL SOUND PRESSURE LEVEL (continued) *See Text

db RE: .0002 Microbars

Correlation No.	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324
Mach No.	0.9	0.9	0.9	0.95	0.95	0.95	0.1	1.0	1.0	1.08	1.08	1.08		0.825	0.825
α	0	+4	-4	-4	0	+4	+4	0	-4	-4	0	+4		+4	+2
β	0	0	0	0	0	0	0	0	0	0	0	0		0	0
Transducer Location															
1															
2		155.5*													
3														154.0*	
4															
5															
6															
7															
8															
9															
12															
14															
15															
16															
18				146.0	146.5	149.0*	148.0*	145.0	145.0	148.0	147.0	148.5*			
20															
21															
23															
26															
27															
28															
29															
30															
31															
32	148.5	146.5	148.0												
33															
34															
35															
36															

Table VII. OVERALL SOUND PRESSURE LEVEL (continued) *See Text

db RE: .0002 Microbars

Correlation No.	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339
Mach No.	0.825	0.825	0.825	0.86	0.86	0.86	0.86	0.86	0.88	0.88	0.88	0.88	0.88	0.9	0.9
α	0	-2	-4	-4	-2	0	+2	+4	+4	+2	0	-2	-4	-4	-2
β	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transducer Location															
1															
2															
3								154.5	153.5						
4															
5															
6															
7															
8															
9															
12															
14															
15															
16															
18															
20															
21															
23															
26															
27															
28															
29															
30															
31															
32															
33															
34															
35															
36															

Table VII. OVERALL SOUND PRESSURE LEVEL (continued) See Text

db RE: .0002 Microbars

Correlation No.	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354
Mach No.	0.9	0.9	0.9	0.92	0.92	0.92	0.92	0.92	1.0	1.0	1.0	1.08	1.08	1.08	
α	0	+2	+4	+4	+2	0	-2	-4	-4	0	+4	+4	0	-4	
β	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Transducer Location															
1															
2															
3											141.0				
4															
5															
6															
7															
8															
9															
12															
14															
15															
16															
18															
20															
21															
23															
26															
27															
28															
29															
30															
31															
32															
33															
34															
35															
36															

Table VII. OVERALL SOUND PRESSURE LEVEL (cont'd) *See Text

db RE: .0002 Microbars

Correlation No.	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369
Mach No.	0.8	0.8	0.85	0.85	0.9	0.9	0.95	0.95	1.0	1.0	1.08	1.08	0.825	0.825	0.825
α	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
β	+4	-4	-4	+4	+4	-4	-4	+4	+4	-4	-4	+4	+4	+2	0
Transducer Location															
1															
2															
3															
4															
5															
6															
7															
8															
9															
12															
14															
15															
16															
18															
20	140.0	144.0*	147.0*	140.5	140.0	149.5*	145.0*	141.0*	142.0	144.0	144.0	144.0			
21	143.0	150.5*	149.0*	143.0	142.5	151.0*	148.0*	142.5	144.5	145.0	145.5	145.5			
23	144.0	144.0	145.0	145.0	145.0*	144.5	145.5	147.5*	148.5*	147.0	149.5	150.5*			
26	158.5	158.5*	144.5*			142.5	142.0			142.5	142.5				
27															
28	160.0	151.0													
29															
30		151.0*	154.0*					160.5*	160.5*	160.0*	155.5*				
31															
32	160.5*	161.0*	159.5*												
33															
34			148.5	151.5*		151.5		147.0*							
35						154.0									
36					157.0	162.5*	162.0*	149.0	147.5						

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Table VII. OVERALL SOUND PRESSURE LEVEL (continued) *See Text

db RE: .0002 Microbars

Correlation No.	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399
Mach No.	0.925	0.925	0.975	0.975	0.975	0.975	0.975	0.9	0.9	0.9	0.9		0.8	0.8	0.85
α	0	0	0	0	0	0	0	0	0	0	0		+4	-4	-4
β	+2	+4	+4	+2	0	-2	-4	-4	-2	+2	+4		-4	-4	-4
Transducer Location															
1															
2															
3															
4															
5															
6															
7															
8															
9															
12															
14															
15													147.0	146.5	146.5
16															
18															
20															
21															
23															
26													157.0	156.5	142.0
27															
28															
29															
30															
31															
32															
33															
34															
35															
36															

Table VII. OVERALL SOUND PRESSURE LEVEL (cont'd) *See Text

db RE: .0002 Microbars

Correlation No.	406	401	402	403	404	405	406	407	408	409	410	411	412	413	414
Mach No.	0.85	0.9	0.9	0.95	0.95	1.0	1.0	1.08	1.08		0.8	0.8	0.85	0.85	0.9
α	+4	+4	-4	-4	+4	+4	-4	-4	+4		+4	-4	-4	+4	+4
β	-4	-4	-4	-4	-4	-4	-4	-4	-4		+4	+4	+4	+4	+4
Transducer Location															
1															
2															
3															
4															
5															
6															
7															
8															
9															
12					143.5	145.0									
14					146.5*			148.0	152.5*						
15	147.0	147.0	146.5	146.5	147.5	147.5	146.5	146.5	148.0						
16															
18															
20															
21															
23															
26	145.0	144.5	140.0	139.5	142.5	143.5	140.5	142.0	143.0						
27															
28															
29															
30															
31															
32						146.5	151.5*	147.5	147.5						
33															
34															
35															
36															

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Table VII. OVERALL SOUND PRESSURE LEVEL (cont'd)*See Text

db RE: .0002 Microbars

Correlation No.	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429
Mach No.	0.9	0.95	0.95	1.0	1.0	1.08	1.08		0.825	0.825	0.825	0.825	0.825	0.85	0.85
α	-4	-4	+4	+4	-4	-4	+4		+4	+2	0	-2	-4	-4	-2
β	+4	+4	+4	+4	+4	+4	+4		-4	-4	-4	-4	-4	-4	-4
Transducer Location															
1															
2															
3															
4															
5															
6															
7															
8															
9															
12															
14															
15															
16															
18															
20															
21															
23															
26											145.5		144.5	143.0	
27															
28															
29															
30		146.0	147.0	145.0	146.5	144.5									
31															
32															
33															
34															
35															
36															

Table VII. OVERALL SOUND PRESSURE LEVEL (cont'd) *See Text

db RE: .0002 Microbars

Correlation No.	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444
Mach No.	0.85	0.85	0.85	0.875	0.875	0.875	0.875	0.875	0.825	0.825	0.825	0.825	0.825	0.825	0.85
α	0	+2	+4	+4	+2	0	-2	-4	+4	-4	-2	0	+2	+4	+4
β	-4	-4	-4	-4	-4	-4	-4	-4	-4	-2	-2	-2	-2	-2	-2
Transducer Location															
1															
2															
3															
4										146.0	146.0	146.5	147.0	147.5	148.5
5															
6															
7															
8															
9															
12															
14															
15															
16															
18															
20															
21															
23															
26	144.0		146.0	144.5		142.5		142.5							
27															
28															
29															
30															
31															
32															
33															
34															
35															
36															

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Table VII. OVERALL SOUND PRESSURE LEVEL (continued) *See Text

db RE: .0002 Microbars

Correlation No.	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459
Mach No.	0.85	0.85	0.85	0.85	0.875	0.875	0.875	0.875	0.875		0.75	0.75	0.75	0.8	
α	+2	0	-2	-4	-4	-2	0	+2	+4		+4	0	-4	-4	
β	-2	-2	-2	-2	-2	-2	-2	-2	-2		-4	-4	-4	-4	
Transducer Location															
1															
2															
3											149.5				
4	148.0	147.0	146.5	146.5	147.0	147.0	147.0	147.5	148.0						
5											146.0	147.5*	147.5*		
6											154.0		148.5*		
7											BAD				
8											143.5	143.5	149.0	150.0	
9											148.5		151.0*		
12											147.0				
14											143.5	144.0	146.0	146.5	
15											141.5	140.5	142.0	141.5	
16															
18											142.0	142.5	142.5	142.0	
20															
21															
23															
26															
27															
28											160.0	159.0	159.0	161.0*	
29											151.0	154.0*	153.0*	160.0*	
30											156.0*	156.0*	155.0*		
31											148.5	148.5	148.5	151.0	
32											149.0	148.5	148.5		
33															
34											149.0	149.0	148.5	151.5	
35															
36											148.0	148.0	148.0	150.0	
											155.0*	151.5	151.0	153.5	

Table VII. OVERALL SOUND PRESSURE LEVEL (cont'd) *See Text

db RE: .0002 Microbars

Correlation No.	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474
Mach No.	0.8	0.8	0.82	0.82	0.82	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.9
α	0	+4	+4	0	-4	-4	0	+4	+4	0	-4	-4	0	+4	+4
β	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
Transducer Location															
1															
2		153.5*	152.0					156.0*	157.0*					156.5*	156.5*
3															
4		146.0	146.0		147.5*	147.0*		145.5	145.0		146.0	147.5*		144.0	143.5
5		155.0	154.5		149.0*	148.5*		153.5	153.0					152.0	151.5
6															
7	143.5	143.5	143.5	143.5	149.0	150.0	143.0	143.0	143.0	142.5	151.5	152.0	142.5	143.0	143.5
8		150.5	151.0		154.0	158.5*		153.0	156.5			149.5*		158.0	143.5
9		148.5	146.0					148.0	145.0					148.5	148.0
12	144.5	144.5	144.5	144.0	146.5	147.0	144.0	144.0	143.5	143.5	147.0	147.0	143.0	143.0	143.0
14	141.0	141.5	142.0	141.0	141.5	142.0	141.0	142.0	142.0	141.5	142.5	143.5	142.0	142.0	142.5
15															
16		143.0	143.0	142.5	142.0	142.0	143.0	143.0	142.5	142.0	141.5	142.0	142.0	142.0	142.0
18															
20															
21															
23															
26															
27	161.0*	161.0*	161.0*	161.0*	161.0*	162.0*	162.0*	162.0*	162.0*	162.0*	162.5*	163.0*	162.5*	163.0*	
28	154.0*	154.0		159.5*	164.0*		166.0*								
29		145.5*	144.5*	142.5	144.0	144.0	142.5	142.0	142.5	143.0	145.0	145.0	143.0	142.5	142.5
30	150.5	150.5	151.0	151.0	151.5	152.0	151.5	151.0	151.0	151.5	151.5	153.0	155.0	155.0	153.0
31					151.0	152.0	151.5	154.0*	155.5*	152.5	152.0	151.0	153.0	156.0*	
32															
33	151.5	153.0*	155.5	154.0	153.5	156.0	156.5	158.5*	160.5*	158.0*	159.0*	159.5*	160.0*	160.5*	159.0*
34					149.0	150.0	150.0	150.0	150.0	154.5	151.5	151.0	155.5*	150.5	152.0
35	150.0*	150.0	149.5	150.0	152.0	151.5	151.5*	150.5	150.0	150.5	151.0	151.0	151.5*	153.5	
36	155.0		160.0*	156.5	154.5	156.0	157.5	160.0*	161.5*	161.0*	160.0*	160.5*	162.0*	161.5*	162.0*

Table VII. OVERALL SOUND PRESSURE LEVEL (cont)*See Text

db RE: .0002 Microbars

Correlation No.	475	476	477	478	479	480	481	482	483	484	485	486	487	488
Mach No.	0.9	0.9	0.92	0.92	0.92	0.94	0.94	0.94	0.96	0.96	0.96	0.98	0.98	0.98
α	0	-4	-4	0	+4	+4	0	-4	-4	0	+4	+4	0	-4
β	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
Transducer Location														
1														
2					155.0						147.0*	146.5*		
3														
4		146.0	146.0		143.0			146.5	147.5					148.5
5					151.5	151.5					152.0	152.0		
6														
7	142.5	152.5	152.5	143.0	143.5	144.0	143.5	153.0	153.5	143.5	144.5	145.0	144.0	153.5
8		146.0	145.0		142.0			145.0	145.5					146.0
9					148.0	148.0					148.0	148.5		
12	142.5	146.5	146.5	143.0	143.0	143.5	143.0	147.0	147.0	143.5	144.0	145.0	143.5	147.0
14	142.5	144.5	144.5	141.5	143.0	143.0	142.0	142.5	143.0	143.0	143.5	144.0	143.5	144.0
15														
16	142.0	142.0	142.0	141.5	141.5	142.0	143.0	142.5	142.5	143.0	143.5	143.5	142.5	142.5
18														
20														
21														
23														
26														
27		164.0*				148.0	149.5	149.0*	146.5	148.0	147.0	146.0	147.5	143.5
28			147.0*	143.5	146.0	145.5	143.5	143.5	143.5	143.5	146.0	146.5	144.0	145.0
29	143.0	145.0	145.0	143.0	142.0	142.5	142.5	144.5	145.5	143.0	42.5	143.5	144.0	146.0
30	145.0		144.5	144.0	145.0	143.5	144.0	144.5	144.5	144.0	144.0	144.0	144.5	143.0
31	153.0	154.5				145.5*	143.5	142.0	142.0	142.0	143.0	142.5	142.0	142.0
32														
33	159.5*	158.5*	162.0*			146.5*	149.0		145.5	147.0	144.5	145.0	147.5	145.0
34	152.0	151.5				142.5	143.0	143.5	143.5	143.0	142.0	142.5	143.5	144.5
35		154.0	141.0	140.5	140.5	140.5	140.0	140.0	140.5	140.0	141.0	141.0	141.0	140.5
36	162.0*	161.0*	160.0*	161.0*	161.0*		158.5*	159.5*	148.0	148.0	151.0*	146.0	147.0	147.0

Table VII. OVERALL SOUND PRESSURE LEVEL (cont'd) *See Text

db RE: .0002 Microbars

Correlation No.	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503
Mach No.	1.0	1.0	1.0	1.02	1.02	1.02	1.04	1.04	1.04	1.06	1.06	1.06	1.08	1.08	1.08
α	-4	0	+4	+4	0	-4	-4	0	+4	+4	0	-4	-4	0	+4
β	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
Transducer Location															
1															
2		142.5	143.0					143.5	143.5					144.0	143.0
3															
4					145.5	153.0					146.5	153.5			
5			151.0	150.5					151.0	152.0					153.0
6															
7	152.5	146.5*	146.0	146.0	145.0	152.0	155.0*	148.0*	147.0	147.5	145.5	154.5	160.5*	149.0*	
8					143.5	147.0					144.5	148.5			
9			149.0	149.0	146.0*				149.5	152.5*	147.0*				153.0
12	151.0*	143.5	145.0	144.5	144.0	147.0	150.5*	144.5	145.0	145.5	144.5	151.5*	153.0*	145.0	
14	144.5	144.0	149.0*	149.0*	144.5	145.0	145.0	145.0	150.0*	148.0	145.5	146.0	146.0	146.0	
15															
16	142.5	143.0	147.5*	147.5*	143.0	142.5	142.5	143.0	147.5*	144.0	143.5	143.5	143.5	143.5	143.5
18															
20															
21															
23															
26															
27	143.5	148.0	145.5	145.0	147.0	144.0	143.5	147.0	144.0	144.5	146.0	144.5	145.0	146.0	
28	145.5	145.0	147.0	146.0	144.5	146.0	146.5	145.5	147.5	148.0	146.0	147.0	147.5	146.5	
29	147.0	145.0	144.0	144.5	145.0	147.0	147.5	145.5	145.0	145.0	145.5	148.0	148.0	145.5	
30	144.5	145.0	145.0	144.0	143.0	143.0	144.0	144.0	144.5	144.0	145.0	144.0	144.0	144.0	
31	142.5	143.0	143.5	143.0	143.0	143.0	143.5	143.5	143.0	144.0	144.5	143.5	144.0	144.0	
32															
33	145.5	147.5	144.5	145.5	148.0	146.5	147.0	148.5	145.0	146.0	148.5	148.0	148.5	148.0	
34	144.5	144.0	143.5	143.5	144.0	144.5	145.0	144.5	144.0	144.5	145.0	145.5	145.5	145.0	
35	140.5	142.0	141.0	141.5	142.5	141.5	141.5	142.0	142.0	142.5	143.0	143.0	143.0	143.0	143.0
36	145.5	145.0	145.0	145.0	145.5	146.0	146.0	146.0	146.0	146.5	147.0	147.5	147.5	146.5	

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Table VII. OVERALL SOUND PRESSURE LEVEL *See Text
db RE: .0002 Microbars Concluded.

Correlation No.	504	505	506													
Mach No.	0.725	0.7	0.65													
α	+4	+4	+4													
β	-4	-4	-4													
Transducer Location																
1																
2																
3																
4																
5																
6																
7																
8																
9	146.0*															
12																
14																
15																
16	140.5	140.0	139.0													
18																
20																
21																
23																
26																
27																
28																
29																
30																
31																
32																
33																
34																
35	147.0	145.0	141.5													
36																

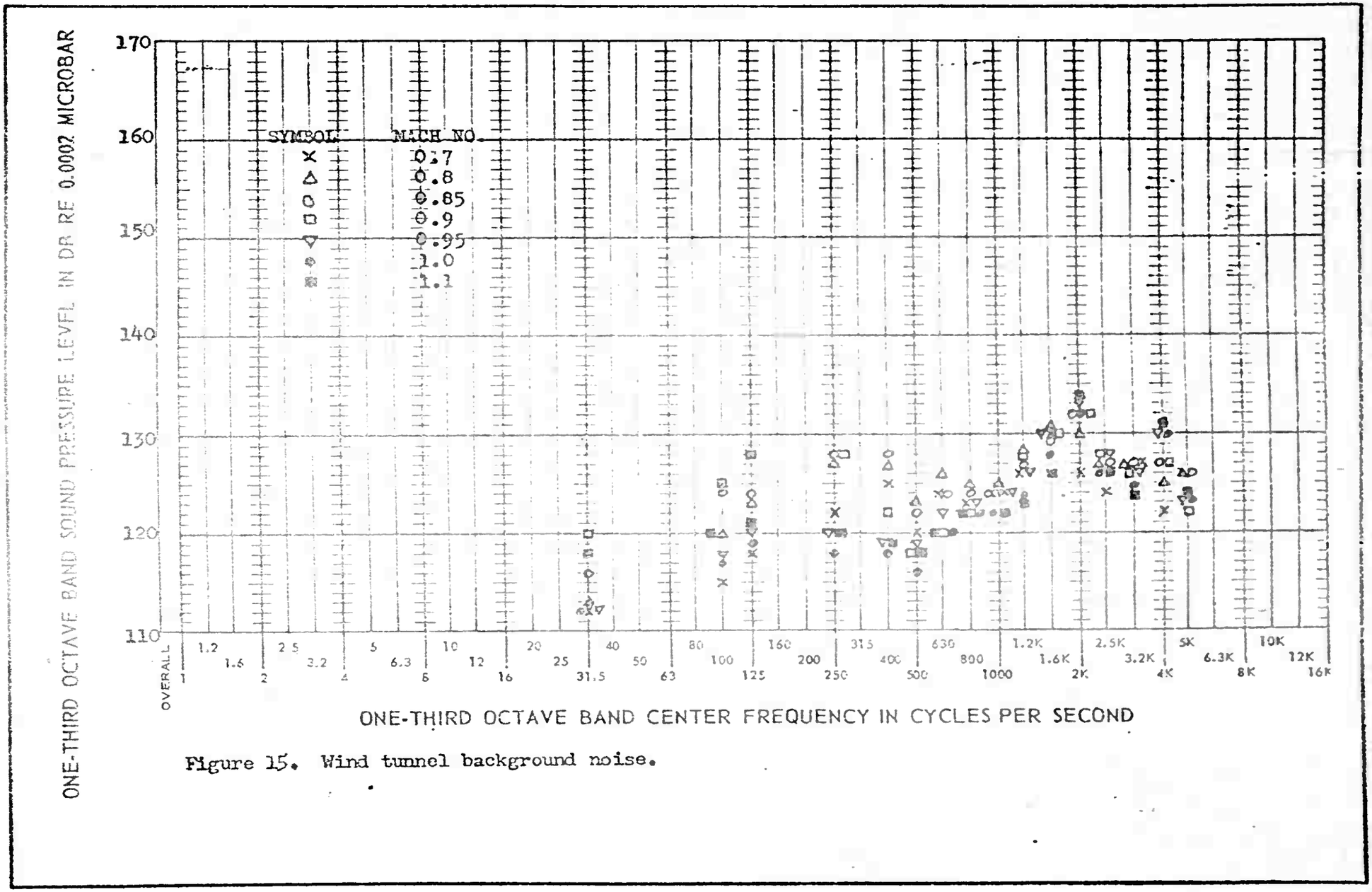

Figure 15. Wind tunnel background noise.

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Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS

Transducer Location: Reference at Test Point 4
Test at Test Point 5

Correlation No.	464	465	470	471	504
Mach No.	0.82	0.84	0.86	0.88	0.725
α	-4	-4	-4	-4	+4
β	-4	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT				
40	-.50	-.50	-.39	-.65	-.37
50	-.16	-.16	-.55	-.55	-.24
63	0	0	-.42	-.44	-.18
80	-.19	-.08	-.20	-.34	-.22
100	0	-.06	-.13	-.34	0
125	+.18	+.13	0	-.33	-.12
160	+.57	+.22	+.18	0	-.06
200	+.60	+.52	+.47	+.16	-.06
250	+.47	+.43	+.33	+.11	0
320	+.47	+.38	+.33	+.05	0
400	+.43	+.33	+.17	0	-.12
500	+.38	+.29	+.17	0	0
630	-.43	+.28	+.06	0	0
800	+.22	+.17	+.06	-.05	0
1000	+.22	+.22	+.22	+.16	+.14
1250					
1600					
2000					
2500					
ΣSPL					

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Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 4
Test at Test Point 8

Correlation No.	464	465	470	471	504
Mach No.	0.82	0.84	0.86	0.88	0.725
α	-4	-4	-4	-4	+4
β	-4	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT				
40	+.52	+.75	-.08	0	+.83
50	+.64	+.56	+.61	+.22	+.77
63	+.67	+.85	+.49	+.43	+.54
80	+.54	+.69	+.46	+.44	+.72
100	+.72	+.60	+.31	+.33	+.64
125	+.67	+.57	+.13	+.38	+.56
160	+.60	+.47	+.28	+.28	+.47
200	+.56	+.52	+.06	+.12	+.43
250	+.47	+.28	-.06	+.12	+.52
320	+.22	0	-.22	+.22	+.49
400	-.12	-.17	-.22	+.06	+.43
500	-.17	-.13	-.13	0	+.33
630	-.17	-.16	-.20	+.06	+.17
800	-.14	-.12	-.16	+.12	+.06
1000	-.20	-.10	-.09	+.23	0
1250	0	-.10	+.10	+.25	+.06
1600	-.39	-.10	+.09	+.32	+.06
2000	-.20	0	+.20	+.34	+.33
2500					

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Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 4
Test at Test Point 9

Correlation No.	464	465	470	471
Mach No.	0.82	0.84	0.86	0.88
α	-4	-4	-4	-4
β	-4	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT			
40	+.33	+.35	+.51	+.58
50	+.60	+.43	+.19	+.22
63	+.58	+.52	+.45	+.38
80	+.66	+.52	+.58	+.53
100	+.73	+.56	+.28	+.48
125	+.56	+.56	+.48	+.43
160	+.60	+.60	+.52	+.34
200	+.60	+.47	+.38	+.33
250	+.28	+.17	+.22	+.33
320	+.12	-.12	0	+.12
400	-.06	-.06	+.06	+.13
500	-.18	+.06	+.06	+.13
630	-.06	0	0	+.06
800	0	0	0	-.07
1000	+.12	+.12	+.06	+.13
1250				
1600				
2000				
2500				
[illegible]				

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Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 14
Test at Test Point 12

Correlation No.	307	351	407	408	502
Mach No.	0.85	1.08	1.08	1.08	1.08
α	-4	+4	-4	+4	0
β	0	0	-4	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	Correlation Coefficient				
40	+.77	0	+.17	0	+.22
50	+.82	+.12	+.33	-.06	+.22
63	+.67	-.06	+.38	-.12	+.43
80	+.70	0	+.38	-.12	+.22
100	+.60	0	+.28	-.12	+.12
125	+.70	+.17	+.28	+.12	+.33
160	+.67	+.06	+.17	-.06	+.17
200	+.67	+.06	+.17	+.17	+.12
250	+.52	+.12	+.33	+.12	+.33
320	+.43	+.06	+.12	+.17	+.12
400	+.38	+.06	+.12	+.12	+.17
500	+.33	+.12	+.12	+.06	+.22
630	+.12	0	+.12	-.06	+.23
800	+.13	0	+.12	-.12	+.12
1000	0	+.06	+.06	-.06	0
1250					
1600					
2000					
2500					
[illegible]					

Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 14
Test at Test Point 15

Correlation No.	321	351	407	408
Mach No.	1.08	1.08	1.08	1.08
α	+4	+4	-4	+4
β	0	0	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT			
40	-.28	-.13	-.06	-.17
50	0	-.24	+.06	-.05
63	0	-.18	+.06	+.06
80	-.17	-.22	-.06	-.06
100	+.06	-.12	0	-.22
125	+.06	-.22	+.12	-.06
160	-.22	-.22	+.06	-.22
200	-.06	-.33	+.06	-.12
250	-.12	-.17	+.17	-.12
320	-.17	-.12	0	-.12
400	-.12	-.12	-.12	-.17
500	-.17	-.12	0	-.17
630	-.17	-.17	0	-.12
800	-.12	-.06	+.06	-.12
1000	0	0	0	-.12
1250				
1600				
2000				
2500				
[illegible]				

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U1-4471-MM

Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 27
Test at Test Point 26

Correlation No.	307	360	397
Mach No.	0.85	0.9	0.8
α	-4	0	+4
β	0	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT		
40	+.33	0	+.17
50	+.12	-.23	0
63	0	-.06	+.12
80	0	+.12	0
100	-.17	-.12	0
125	-.06	+.06	+.13
160	0	0	0
200	+.06	0	0
250	-.12	0	+.06
320	0	+.12	0
400	+.17	+.06	-.06
500	0	0	-.16
630	0	-.07	+.08
800	0	+.09	0
1000	0	0	0
1250			
1600			
2000			
2500			

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ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (Continued)

Transducer Location: Reference at Test Point 14
Test at Test Point 16

Correlation No.	307	351	407	502
Mach No.	0.85	1.08	1.08	1.08
α	-4	+4	-4	0
β	0	0	-4	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT			
40	±.22	-.13	+.14	-.31
50	-.23	-.06	-.39	-.39
63	0	-.23	0	-.07
80	-.17	-.06	+.23	-.23
100	-.12	-.06	0	-.23
125	-.12	-.12	+.33	-.06
160	0	-.06	0	-.22
200	+.13	-.22	+.24	-.28
250	+.06	-.06	0	-.38
320	0	-.06	+.06	-.17
400	+.12	0	0	-.12
500	+.06	-.06	+.16	0
630				
800				
1000				
1250				
1600				
2000				
2500				
ΣSPL				

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Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 27
Test at Test Point 28

Correlation No.	307													
Mach No.	0.85													
α	-4													
β	0													
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT													
40	+.38													
50	+.38													
63	+.33													
80	+.60													
100	+.52													
125	+.47													
160	+.43													
200	+.43													
250	+.43													
320	+.47													
400	+.38													
500	+.33													
630														
800														
1000														
1250														
1600														
2000														
2500														

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Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 27
Test at Test Point 29

Correlation No.	307
Mach No.	0.85
α	-4
β	0

ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT
40	+.21
50	-.24
63	0
80	+.06
100	0
125	-.12
160	+.06
200	0
250	0
320	0
400	0
500	-.06
630	
800	
1000	
1250	
1600	
2000	
2500	

Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 32
Test at Test Point 21

Correlation No.	307
Mach No.	0.85
α	-4
β	0

ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT
40	0
50	+12
63	+.22
80	+.22
100	+.12
125	+.06
160	-.12
200	0
250	-.12
320	-.06
400	-.06
500	-.06
630	
800	
1000	
1250	
1600	
2000	
2500	

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Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 32
Test at Test Point 30

Correlation No.	307	357	397	415									
Mach No.	0.85	0.85	0.8	0.9									
α	-4	0	+4	-4									
β	0	-4	-4	+4									
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT												
40	-.14	+.15	-.29	+.22									
50	-.15	+.14	-.48	-.06									
63	-.26	+.35	-.27	0									
80	-.40	+.13	-.20	-.07									
100	-.16	+.40	-.78	-.12									
125	0	+.12	-.53	+.22									
160	-.22	+.12	-.33	-.12									
200	-.12	+.12	-.22	+.06									
250	-.12	-.12	-.17	-.06									
320	-.17	-.06	-.06	+.06									
400	-.12	0	-.08	-.06									
500	-.14	0	-.13	-.06									
630	-.26	-.07	-.06	-.14									
800	-.20	-.06	+.06	+.07									
1000	-.20	-.06											
1250													
1600													
2000													
2500													

Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 32
Test at Test Point 31

Correlation No.	307	357
Mach No.	0.85	0.85
α	-4	0
β	0	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT	
40	+.22	+.13
50	+.06	+.24
63	+.22	+.12
80	0	+.33
100	+.17	+.23
125	+.12	+.07
160	+.06	+.06
200	+.17	0
250	+.12	0
320	+.06	+.12
400	+.06	+.12
500	0	+.12
630	0	+.13
800	0	+.13
1000		
1250		
1600		
2000		
2500		

Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 32
Test at Test Point 34

Correlation No.	307	357
Mach No.	0.85	0.85
α	-4	0
β	0	-4
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT	
40	+.17	0
50	+.22	0
63	+.22	+.23
80	+.06	+.17
100	+.17	+.06
125	+.06	0
160	-.12	-.12
200	-.06	+.06
250	-.12	0
320	-.12	-.06
400	0	-.12
500	-.12	-.13
630	0	-.13
800	0	-.12
1000		
1250		
1600		
2000		
2500		

Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (continued)

Transducer Location: Reference at Test Point 32
Test at Test Point 35

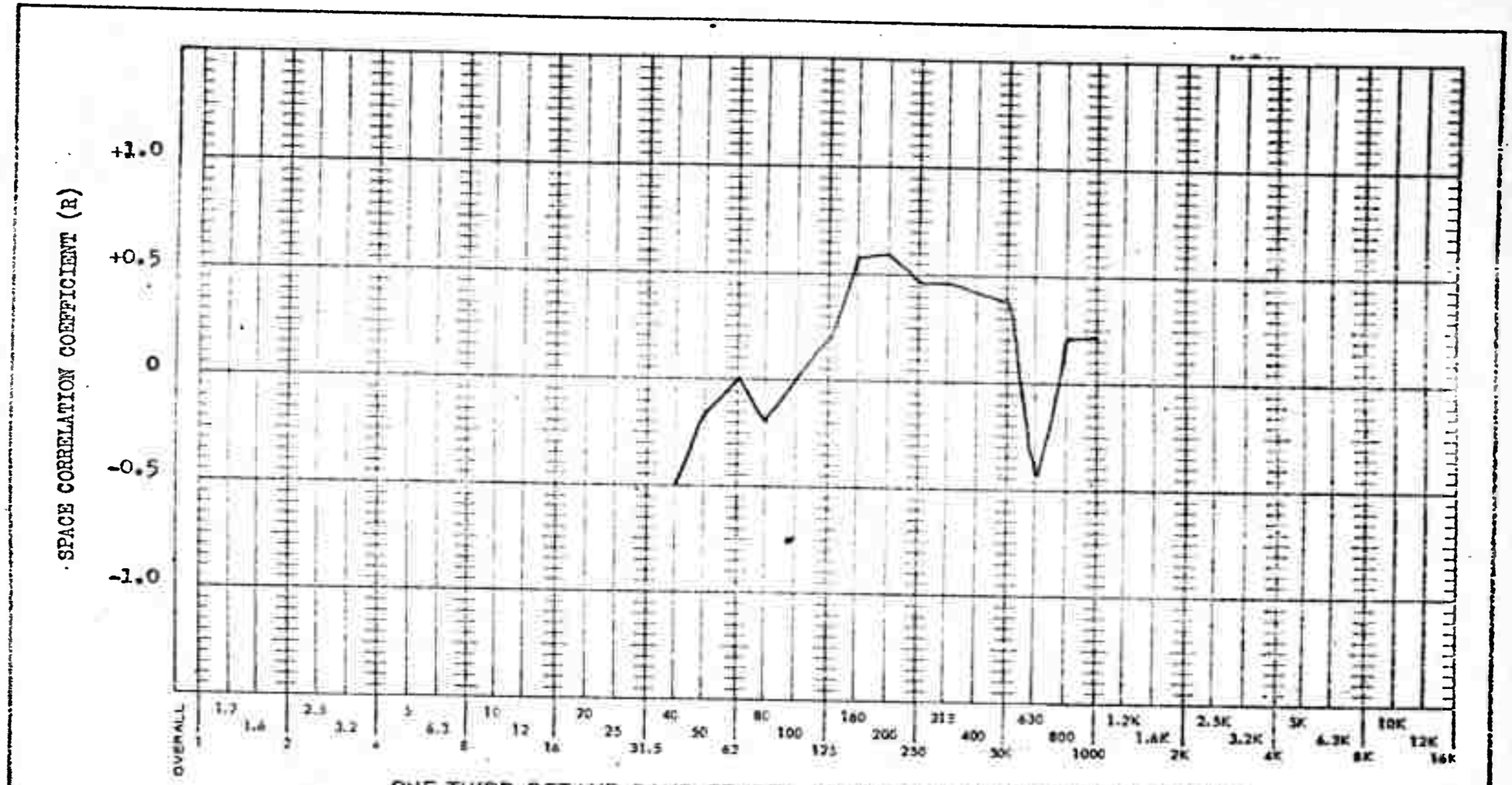
Correlation No.	307	397	415										
Mach No.	0.85	0.8	0.9										
α	-4	+4	-4										
β	0	-4	+4										
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENT												
40	+.34	-.29	0										
50	+.34	-.24	0										
63	+.17	+.31	+.06										
80	+.17	+.27	-.28										
100	+.06	+.20	0										
125	+.22	-.09	-.06										
160	+.06	0	-.06										
200	+.06	0	-.06										
250	0	-.12	-.06										
320	0	0	+.06										
400	0	+.07	+.06										
500	+.06	+.07	+.06										
630	0	-.07	-.06										
800	0	-.06	-.06										
1000	0	0	0										
1250													
1600													
2000													
2500													

Table VIII. ACOUSTIC TEST RESULTS - SPACE-CORRELATION COEFFICIENTS (Concluded)

Transducer Location: Reference at Test Point 32
Test at Test Point 36

Correlation No.	307
Mach No.	0.85
α	-4
β	0

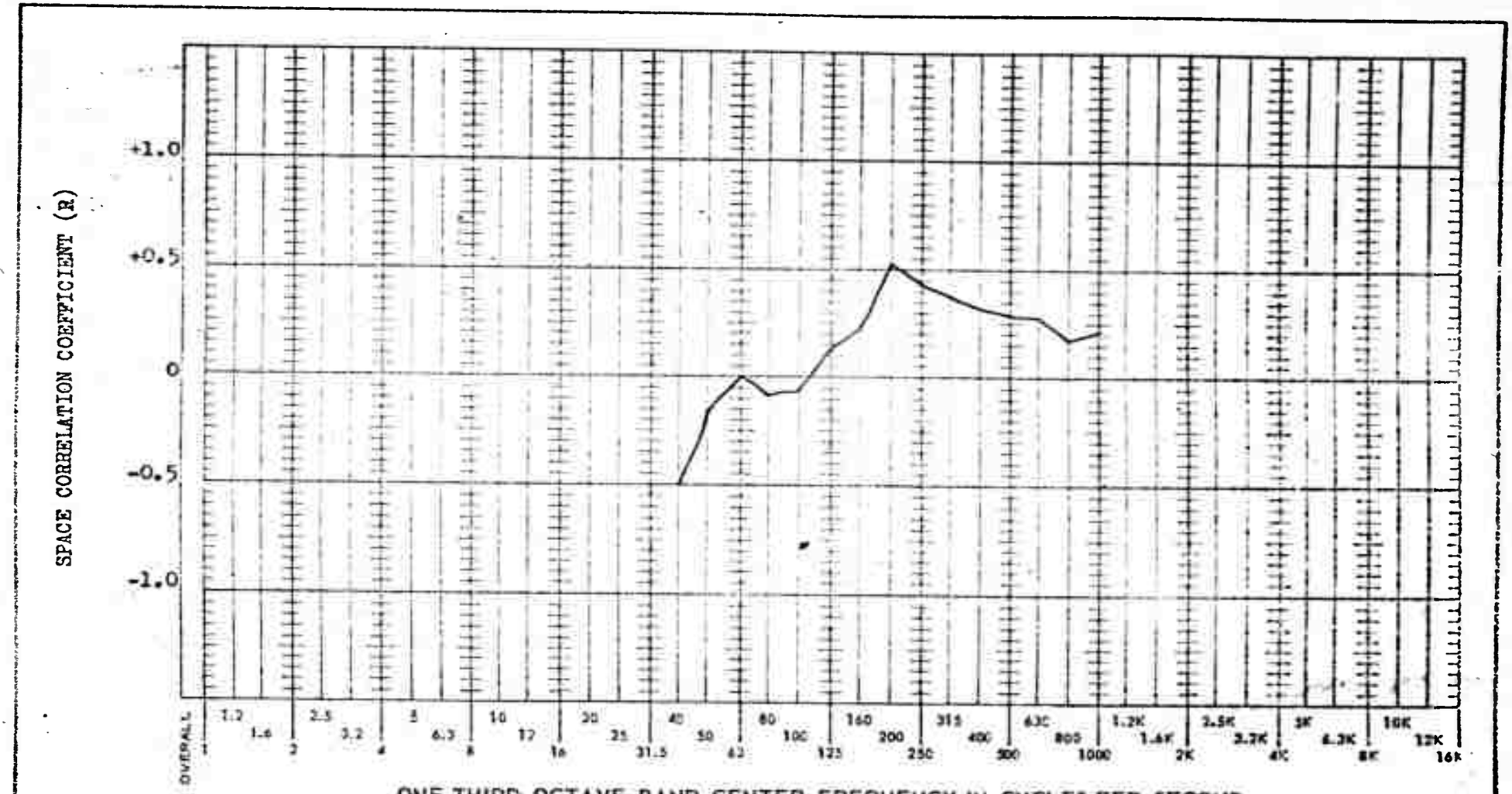
ONE THIRD OCTAVE BAND CENTER FREQUENCY	CORRELATION COEFFICIENTS
40	-.12
50	-.12
63	-.06
80	-.12
100	-.22
125	-.22
160	-.22
200	-.22
250	-.22
320	-.33
400	-.22
500	-.22
630	
800	
1000	
1250	
1600	
2000	
2500	



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 407, TEST POINT 5

CORRELATION NO. 464
MACH NO. 0.82
α -4
β -4

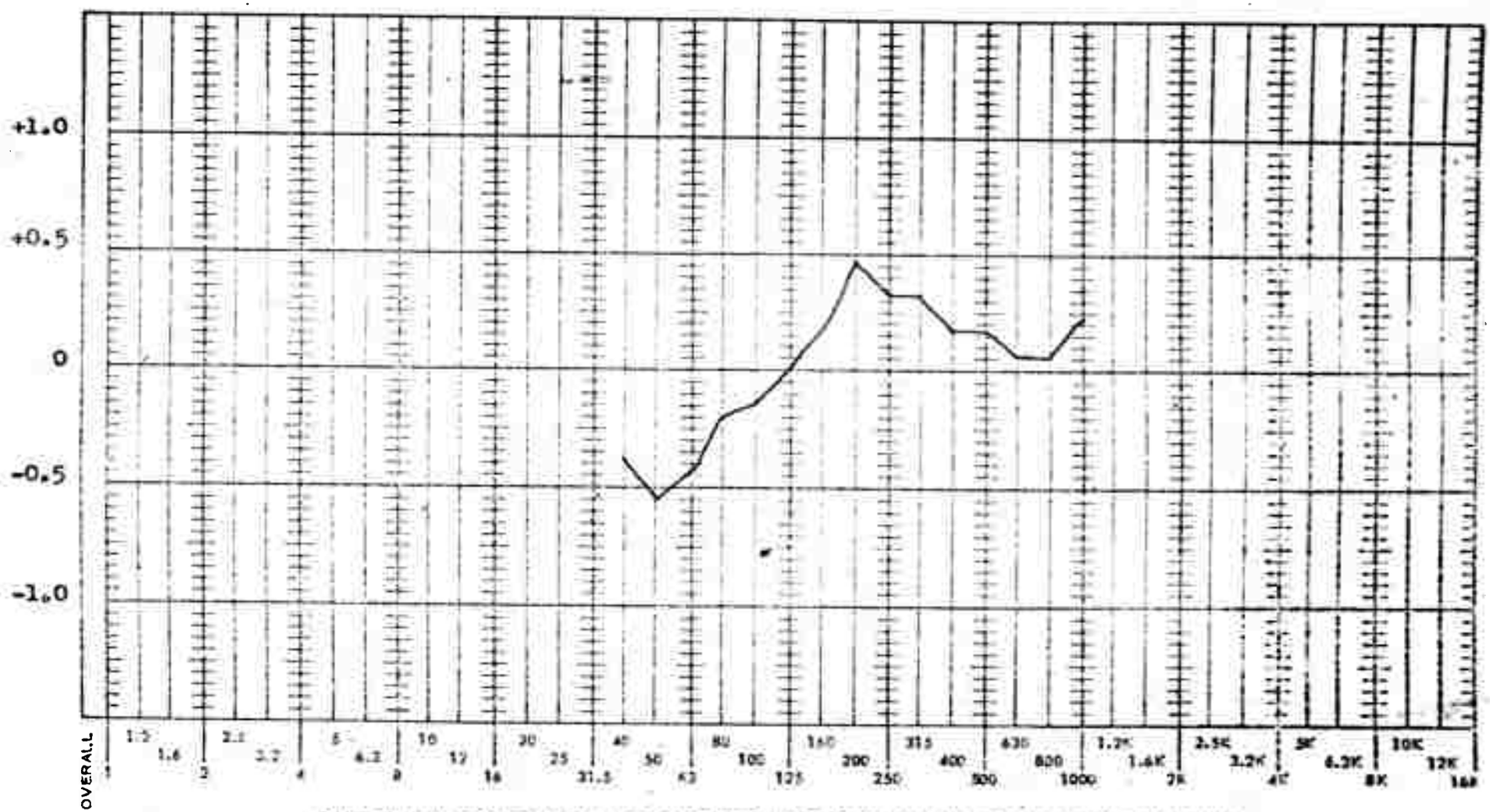
Figure 16. Space correlation coefficients.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 407, TEST POINT 5

CORRELATION NO. 465
MACH NO. 0.84
α -4
β -4

Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 407, TEST POINT 5

CORRELATION NO. 470
MACH NO. 0.86
α -4
β -4

Figure 16. Continued.

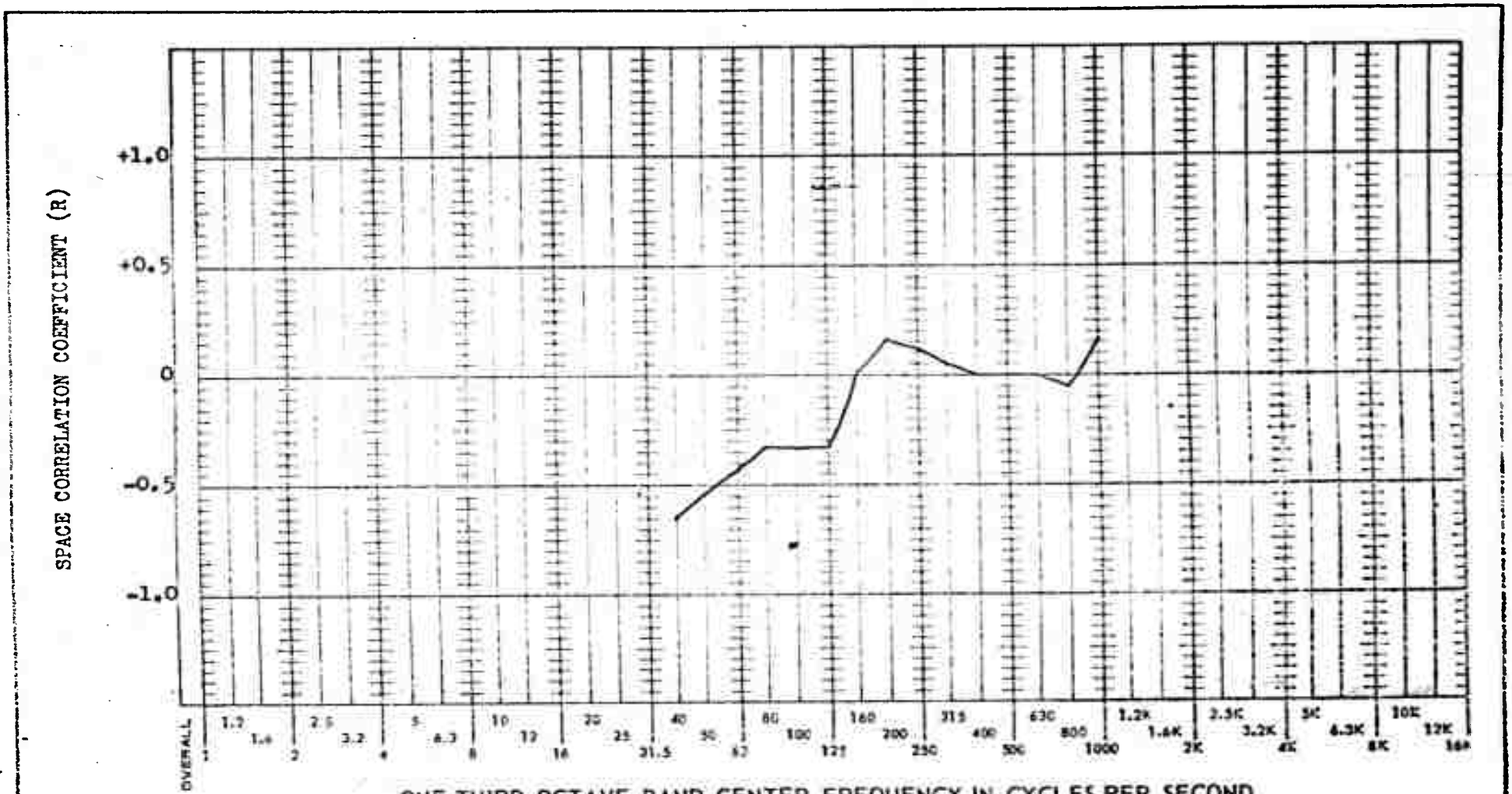
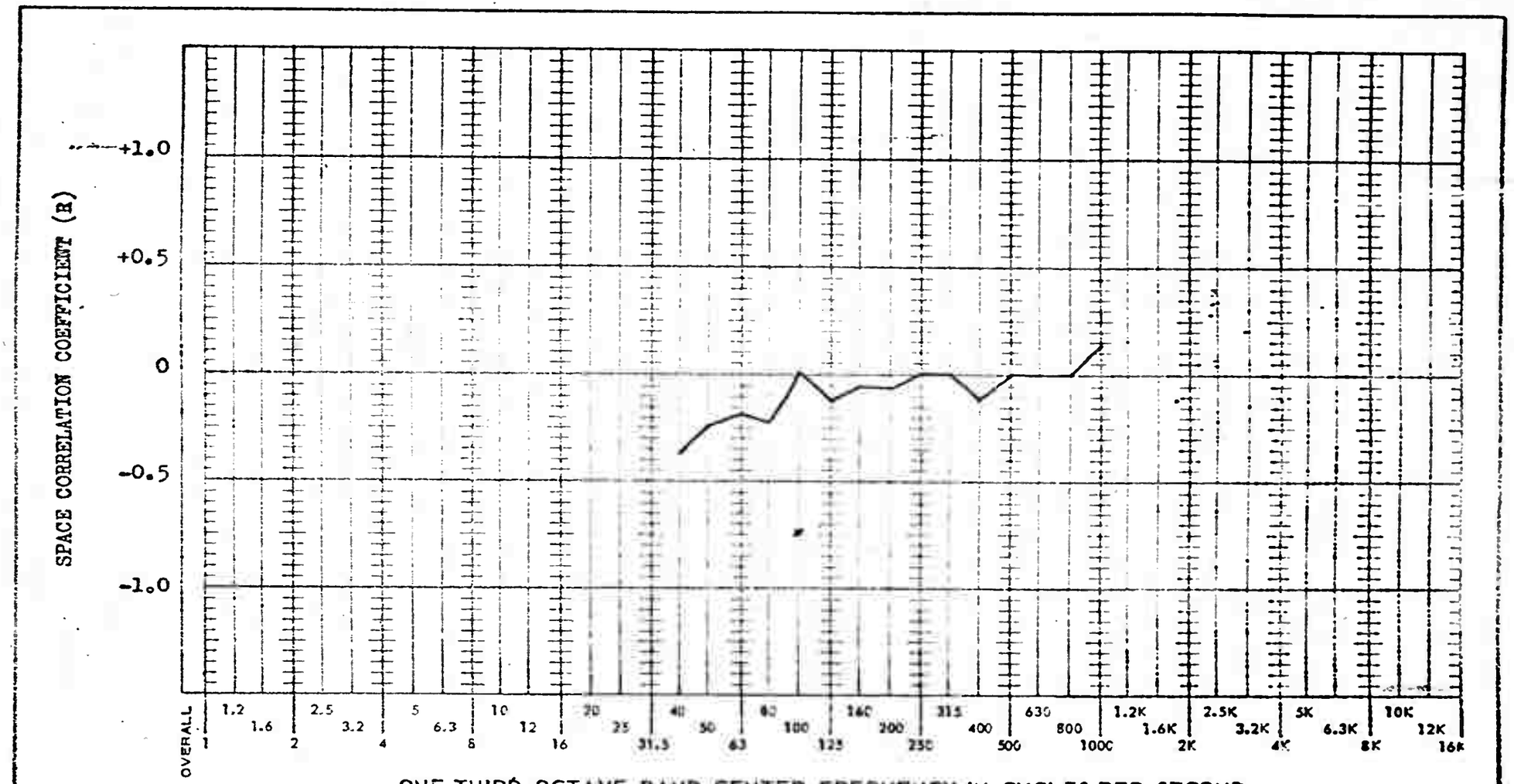


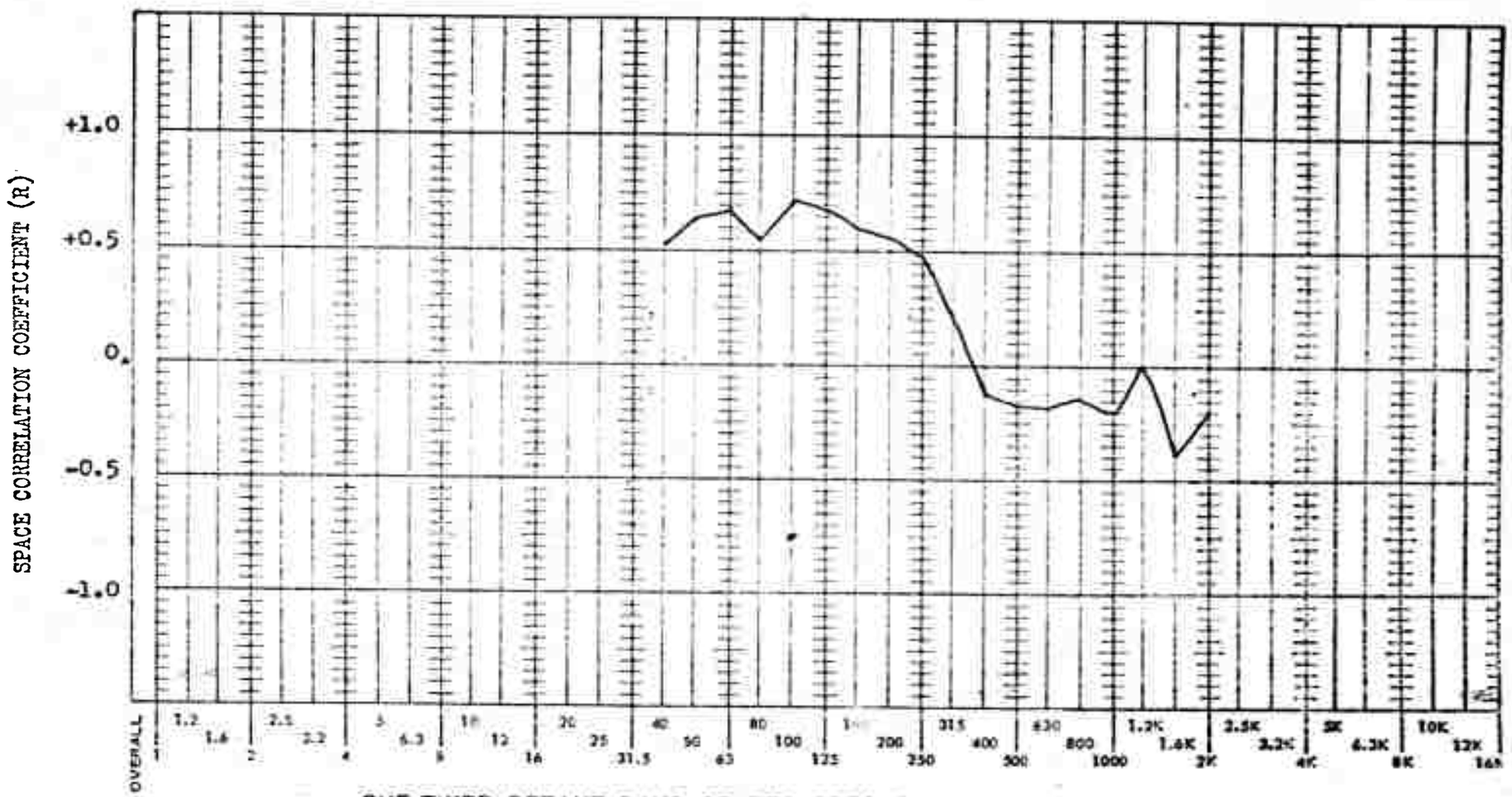
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 407, TEST POINT 5

CORRELATION NO. 504
MACH NO. 0.725
α +4
β -4

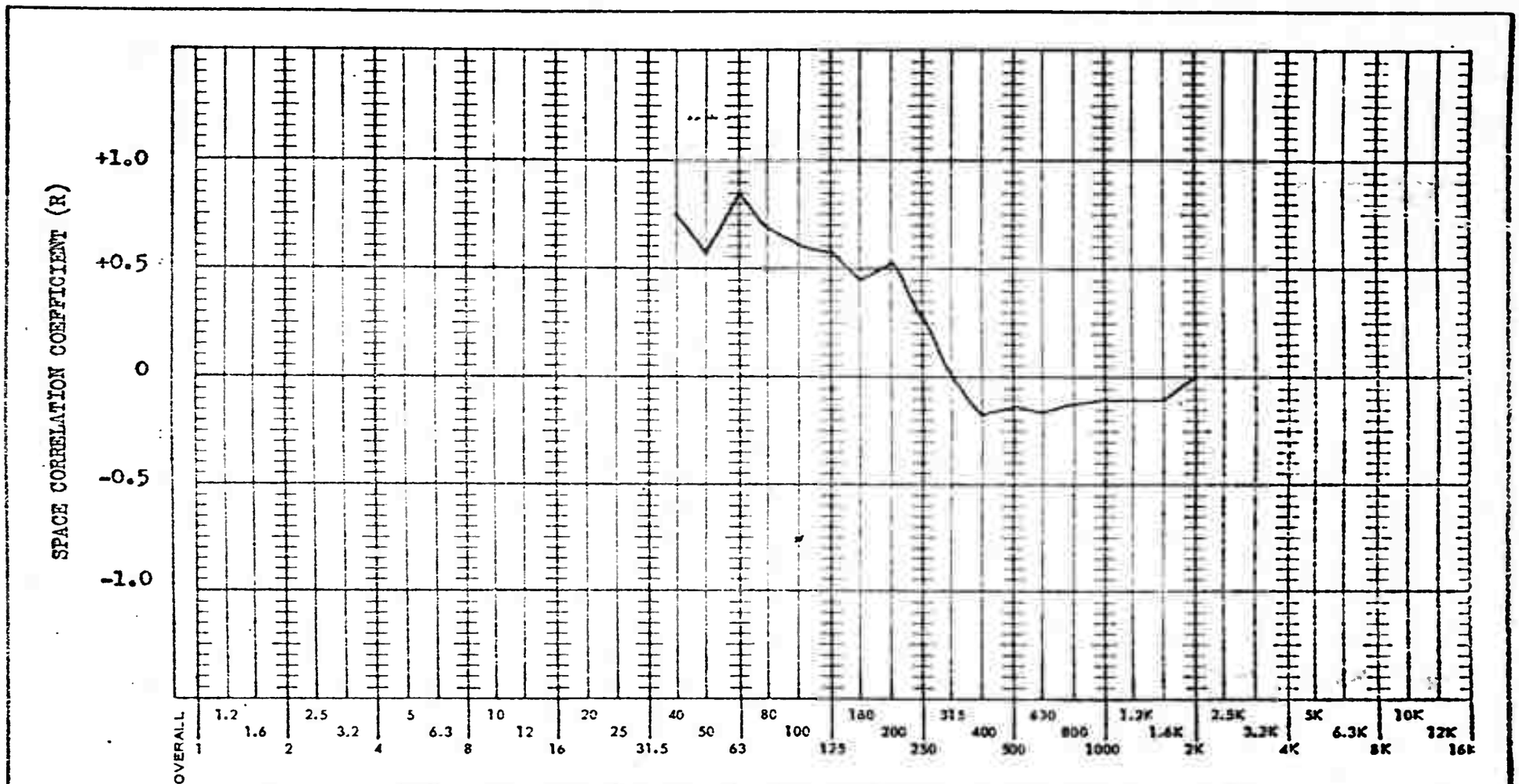
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 436, TEST POINT 8

CORRELATION NO. 464
MACH NO. 0.82
α -4
β -4

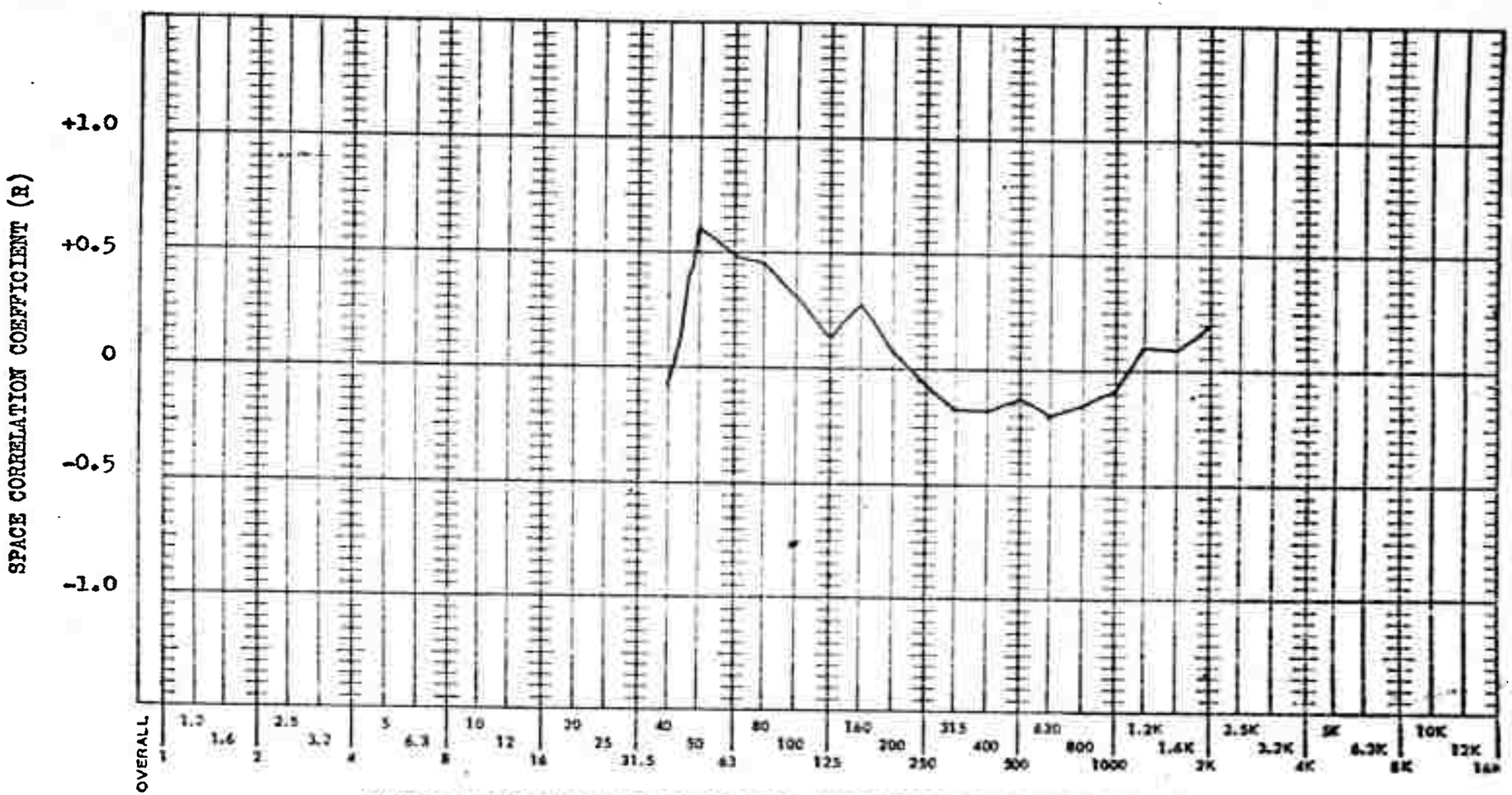
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 416, TEST POINT 8

CORRELATION NO. 465
MACH NO. 0.84
α -4
β -4

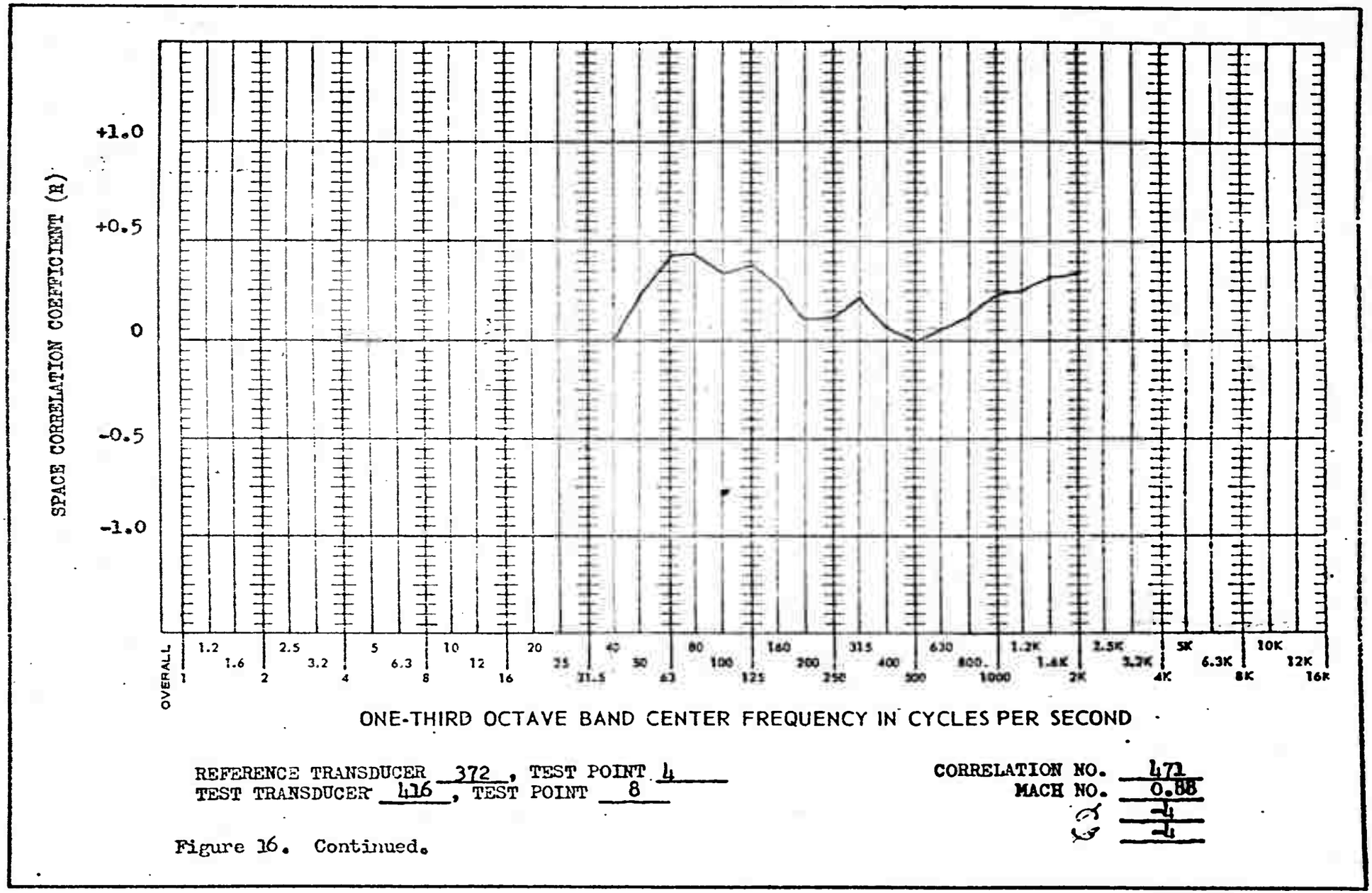
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 416, TEST POINT 8

CORRELATION NO. 470
MACH NO. 0.86
α 4
β 4

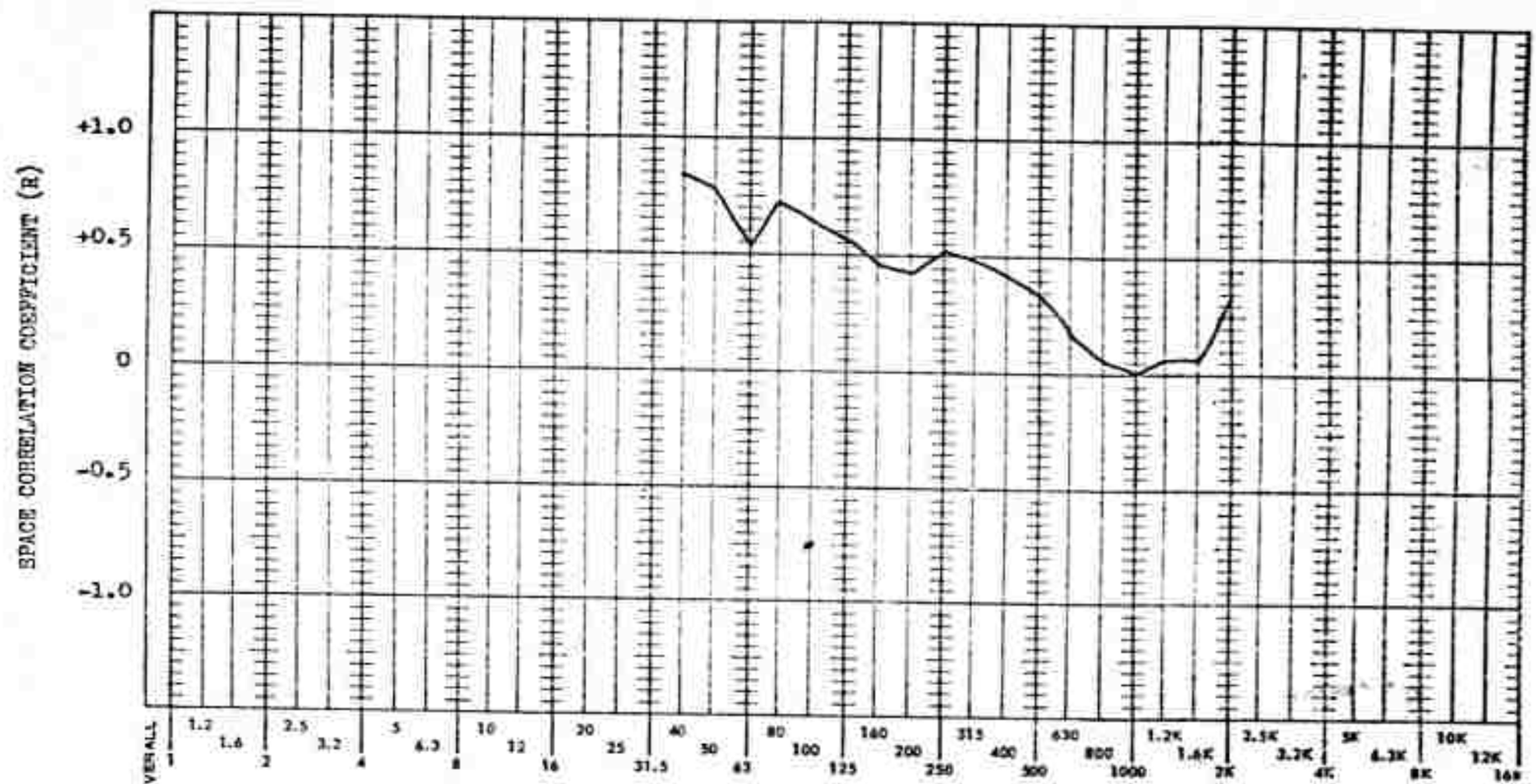
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 416, TEST POINT 8

CORRELATION NO. 471
MACH NO. 0.88
C -7
C -4

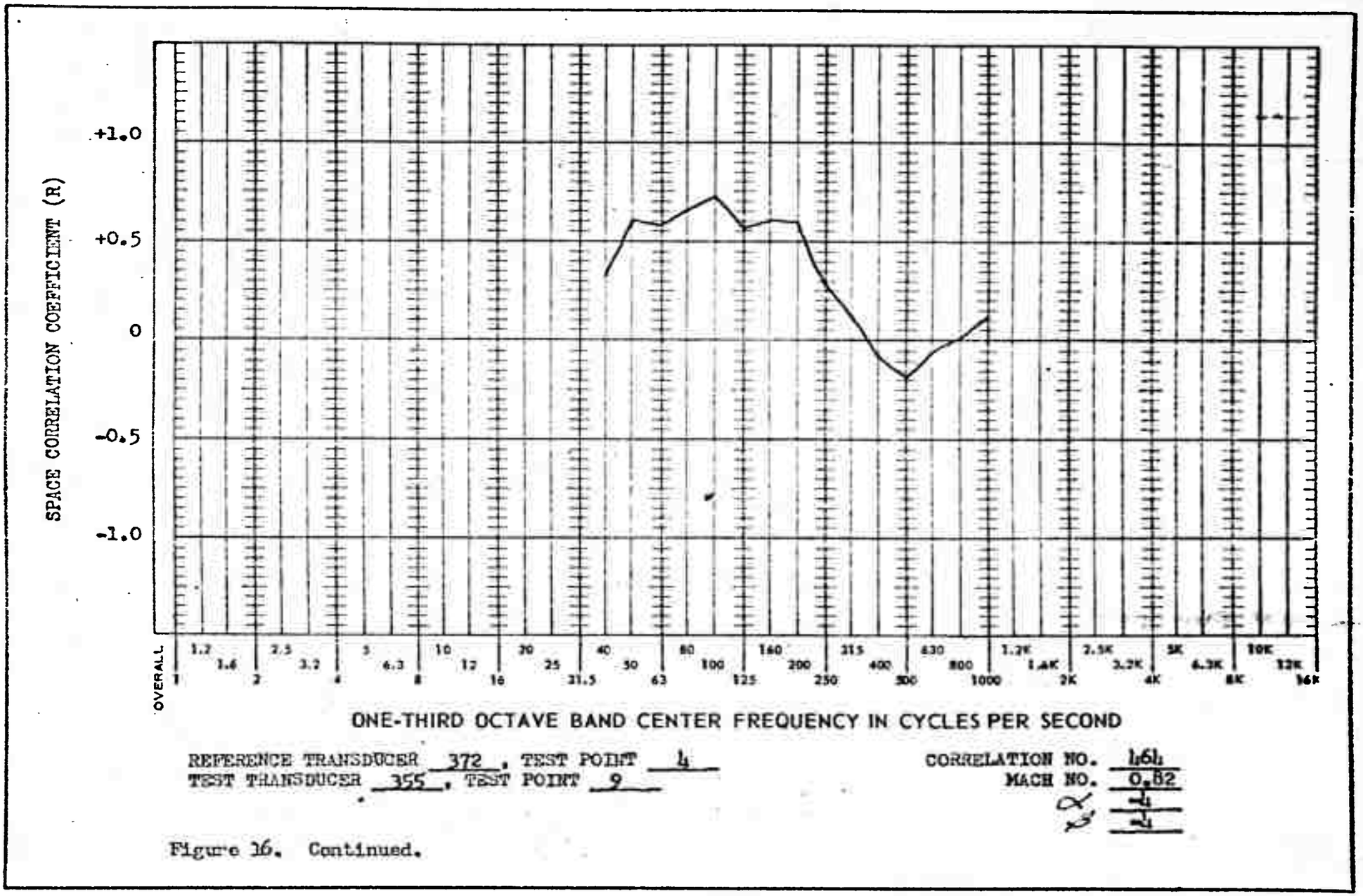
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 416, TEST POINT 8

CORRELATION NO. 504
MACH NO. 0.725
α 24
β 24

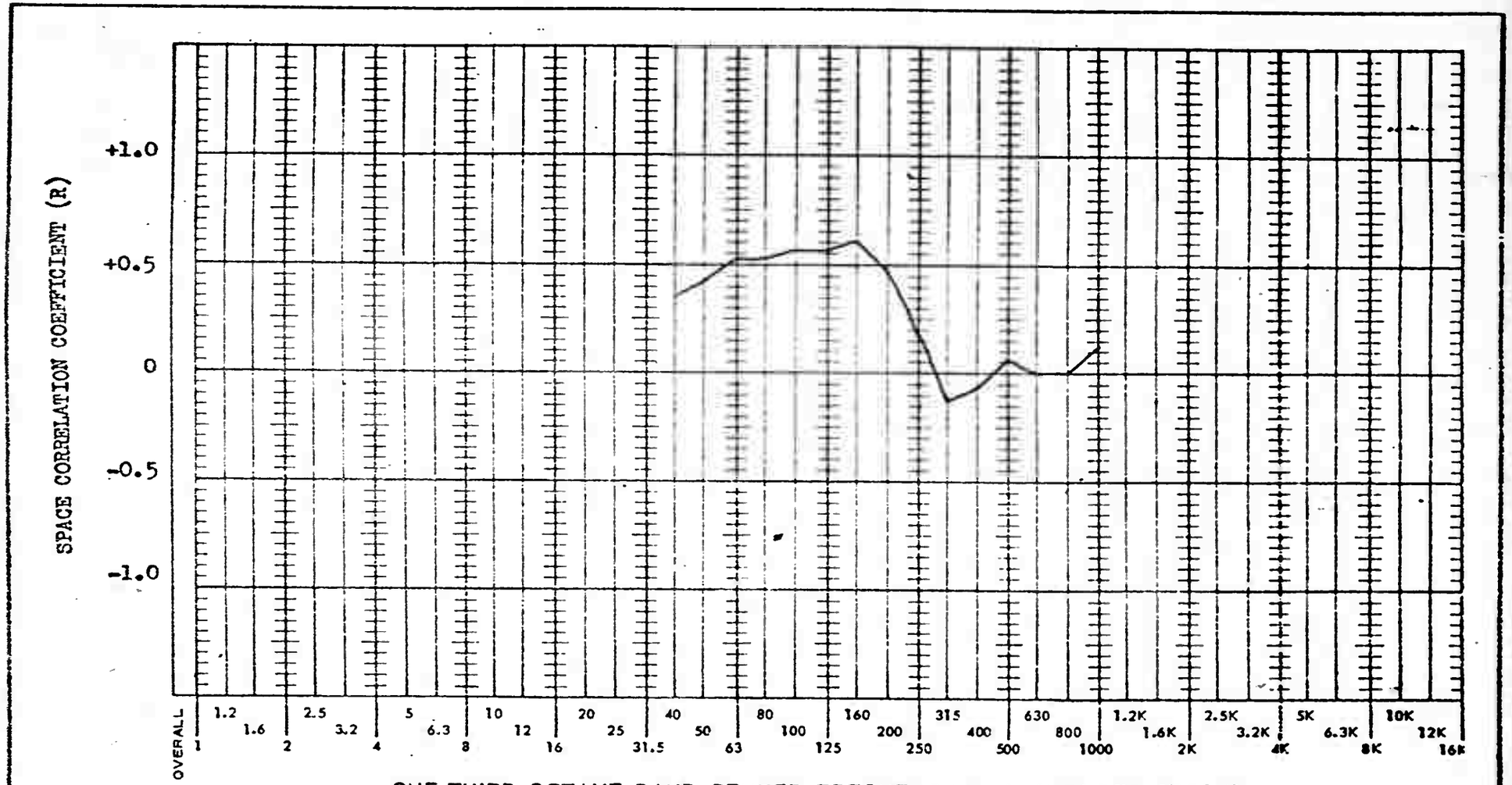
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 355, TEST POINT 9

CORRELATION NO. 164
MACH NO. 0.82
α 4
β 24

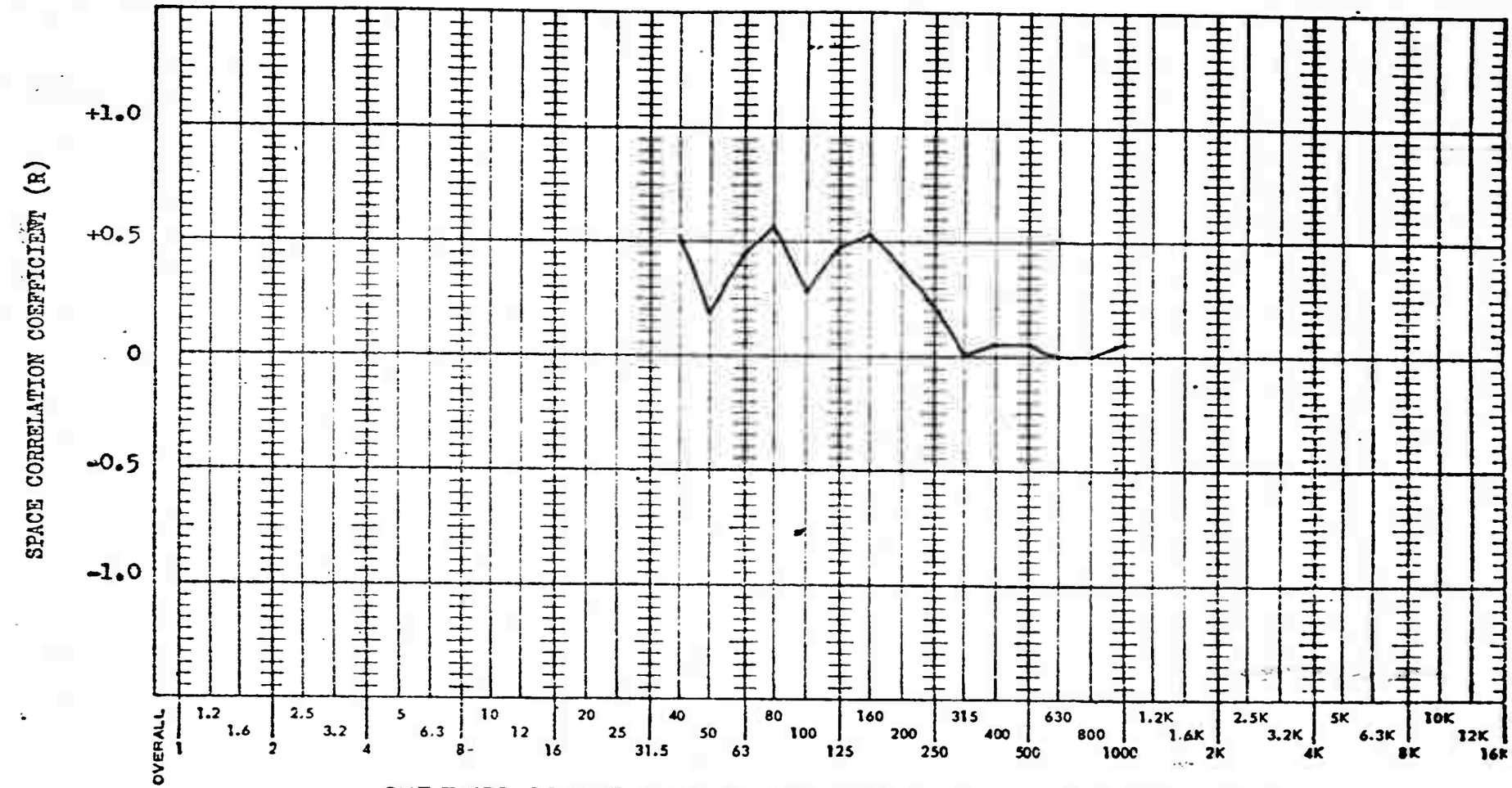
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 355, TEST POINT 9

CORRELATION NO. 465
MACH NO. 0.84
α -4
β -4

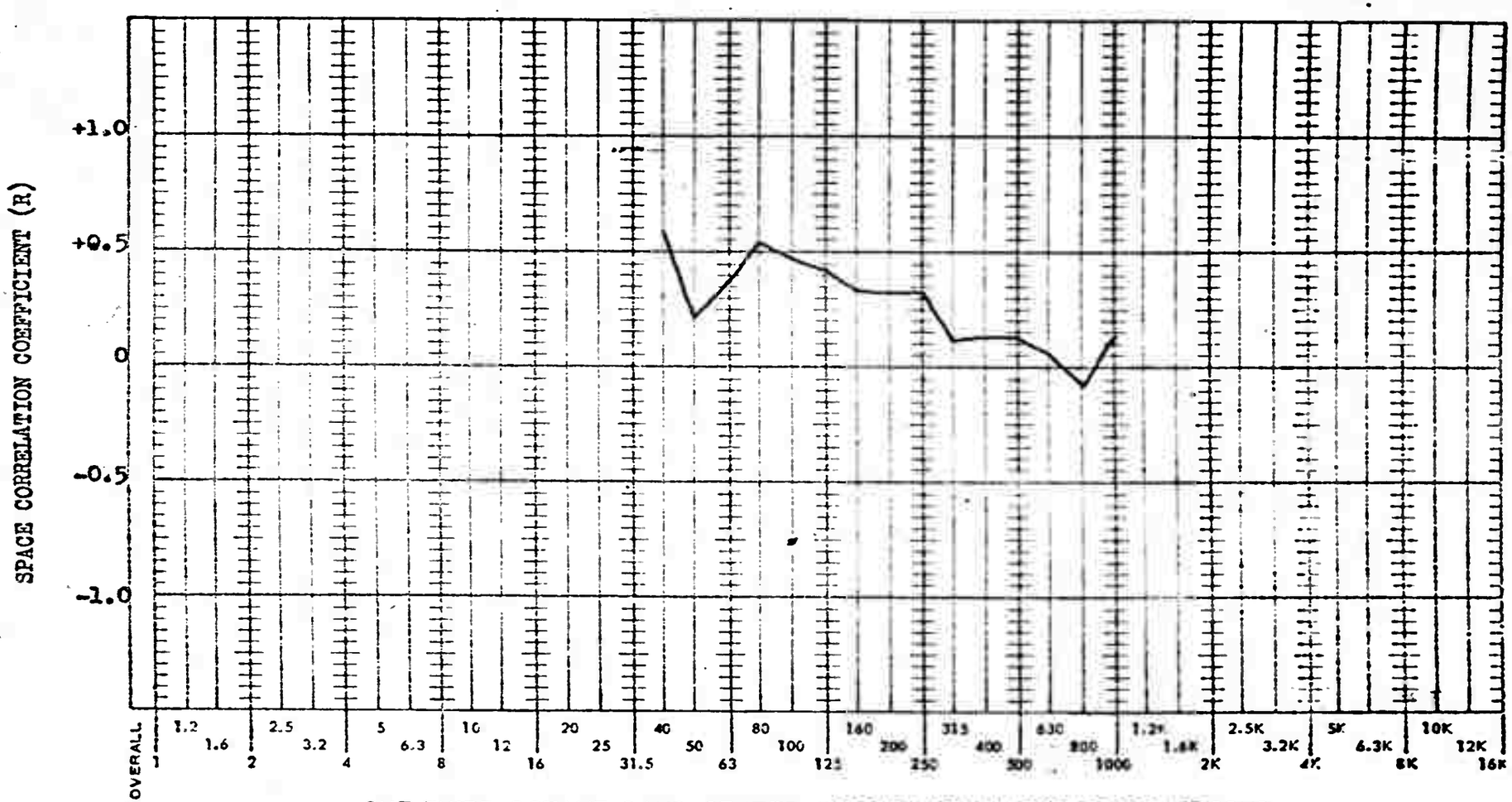
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 355, TEST POINT 9

CORRELATION NO. 470
MACH NO. 0.86
α 4
β 4

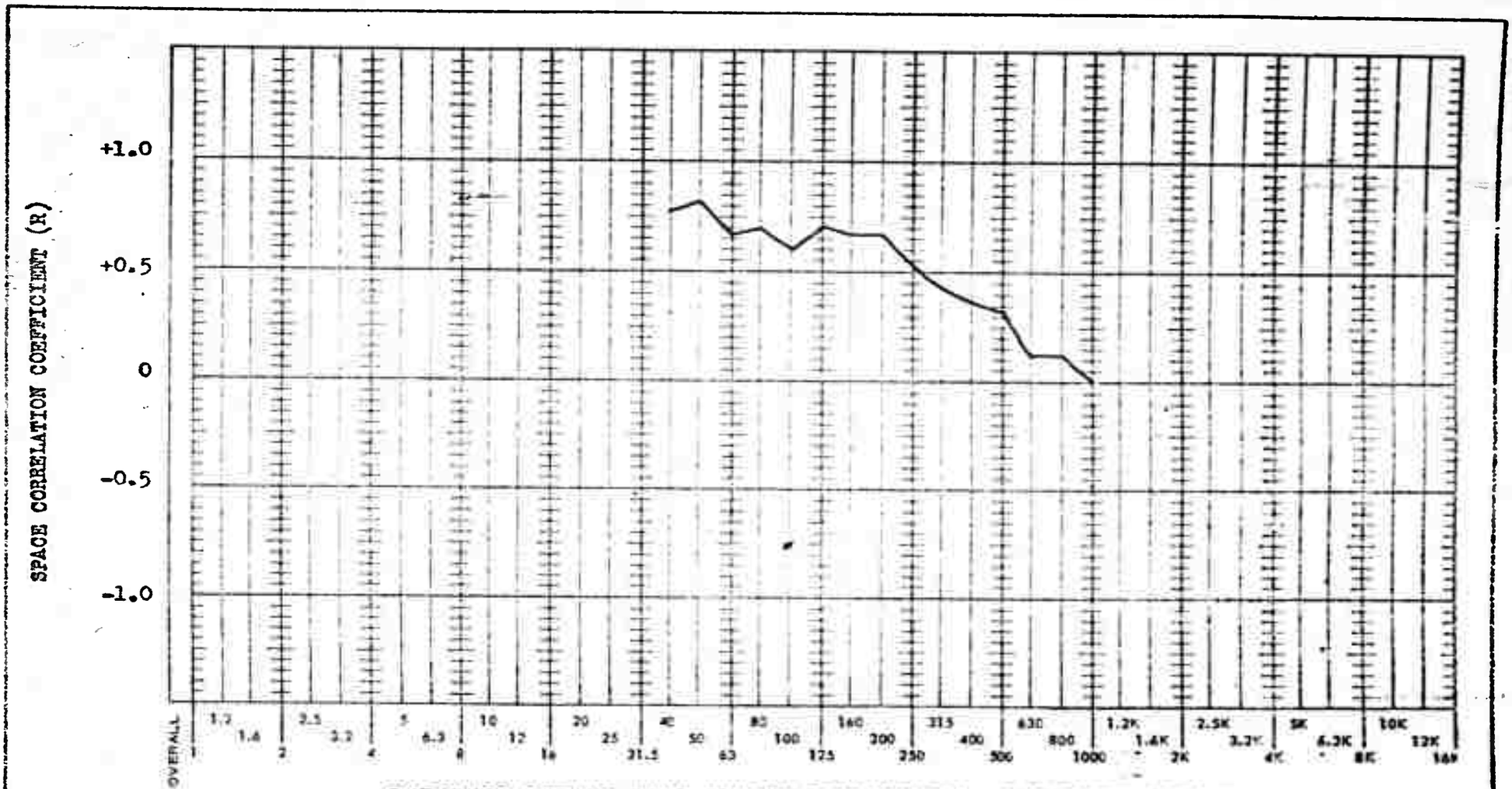
Figure 16. Continued.



REFERENCE TRANSDUCER 372, TEST POINT 4
TEST TRANSDUCER 355, TEST POINT 9

CORRELATION NO. 471
MACH NO. 0.88
α -4
β -4

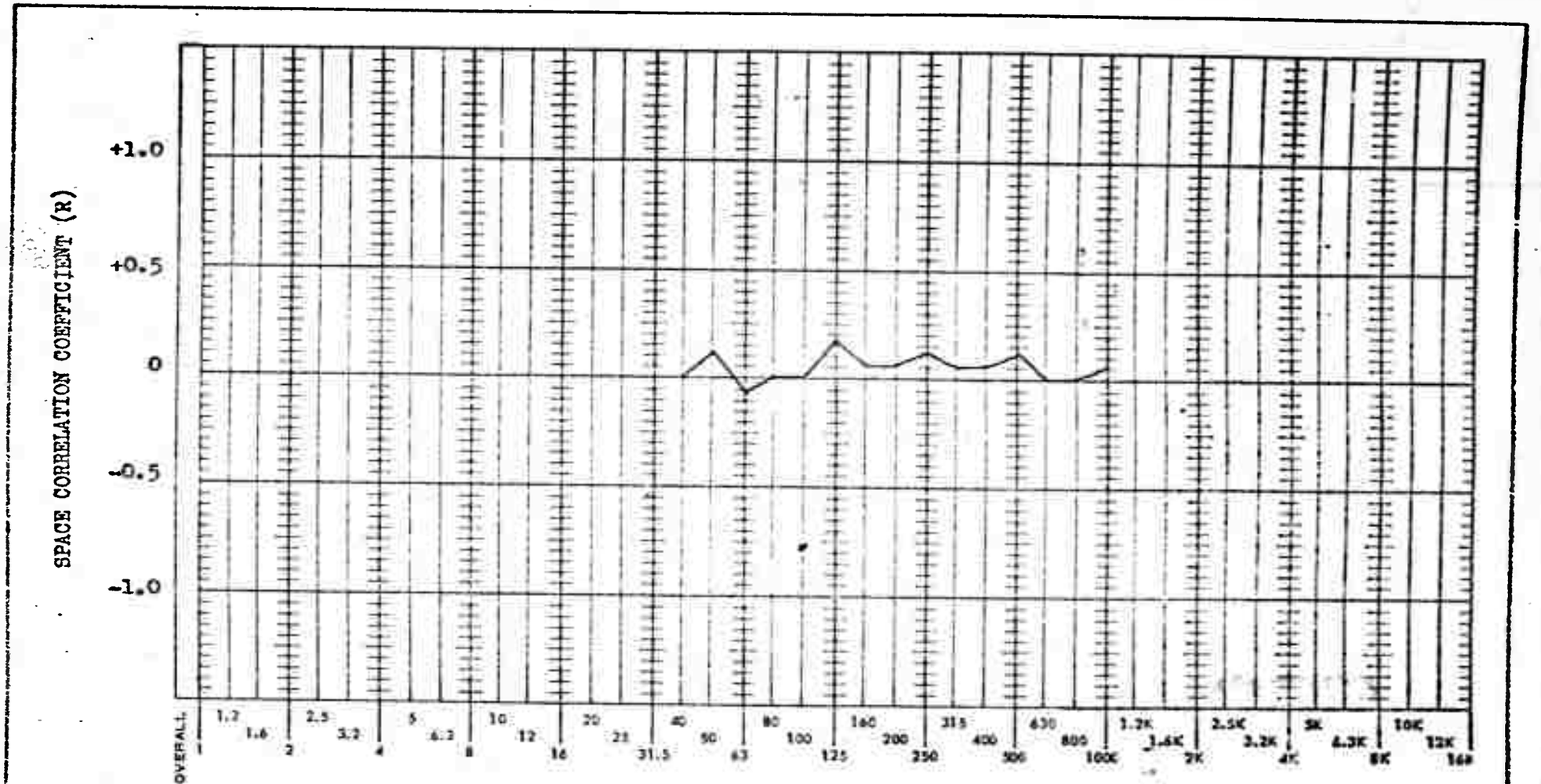
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 317, TEST POINT 12

CORRELATION NO. 307
MACH NO. 0.85
α, -4
β, 0

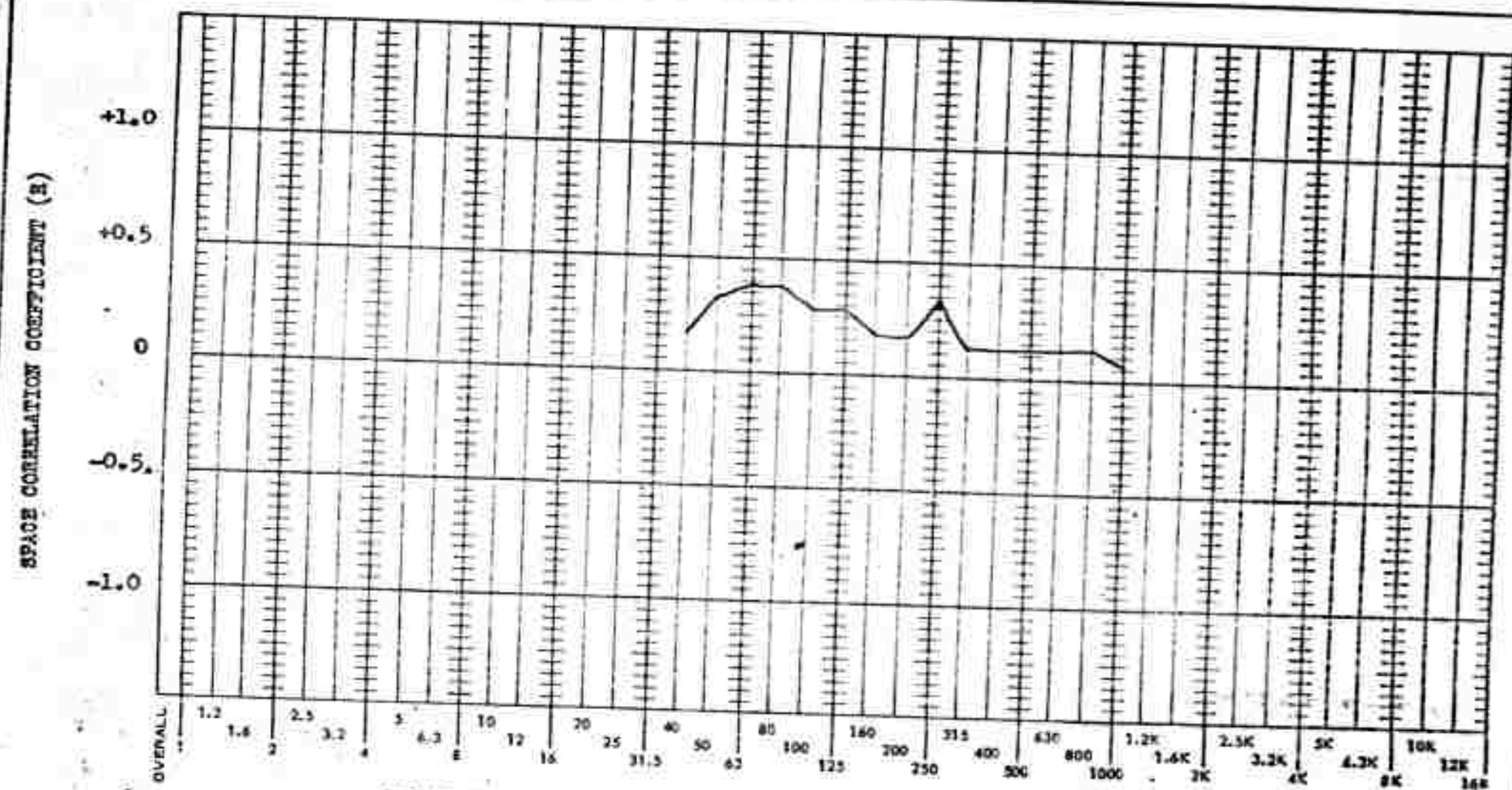
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 24
TEST TRANSDUCER 317, TEST POINT 12

CORRELATION NO. 351
MACH NO. 1.06
α +4
β 0

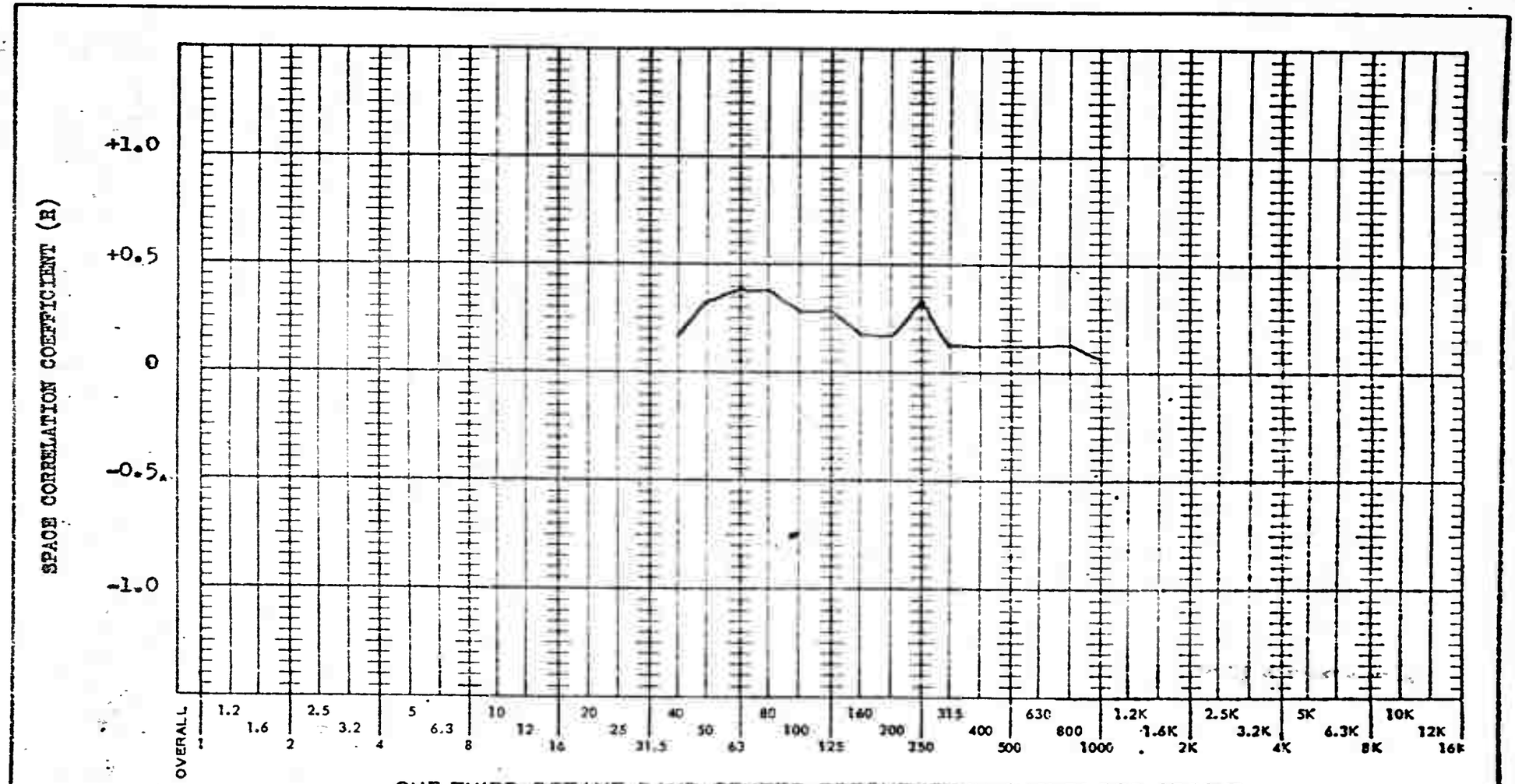
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 317, TEST POINT 12

CORRELATION NO. 407
MACH NO. 1.08
α -4
β -4

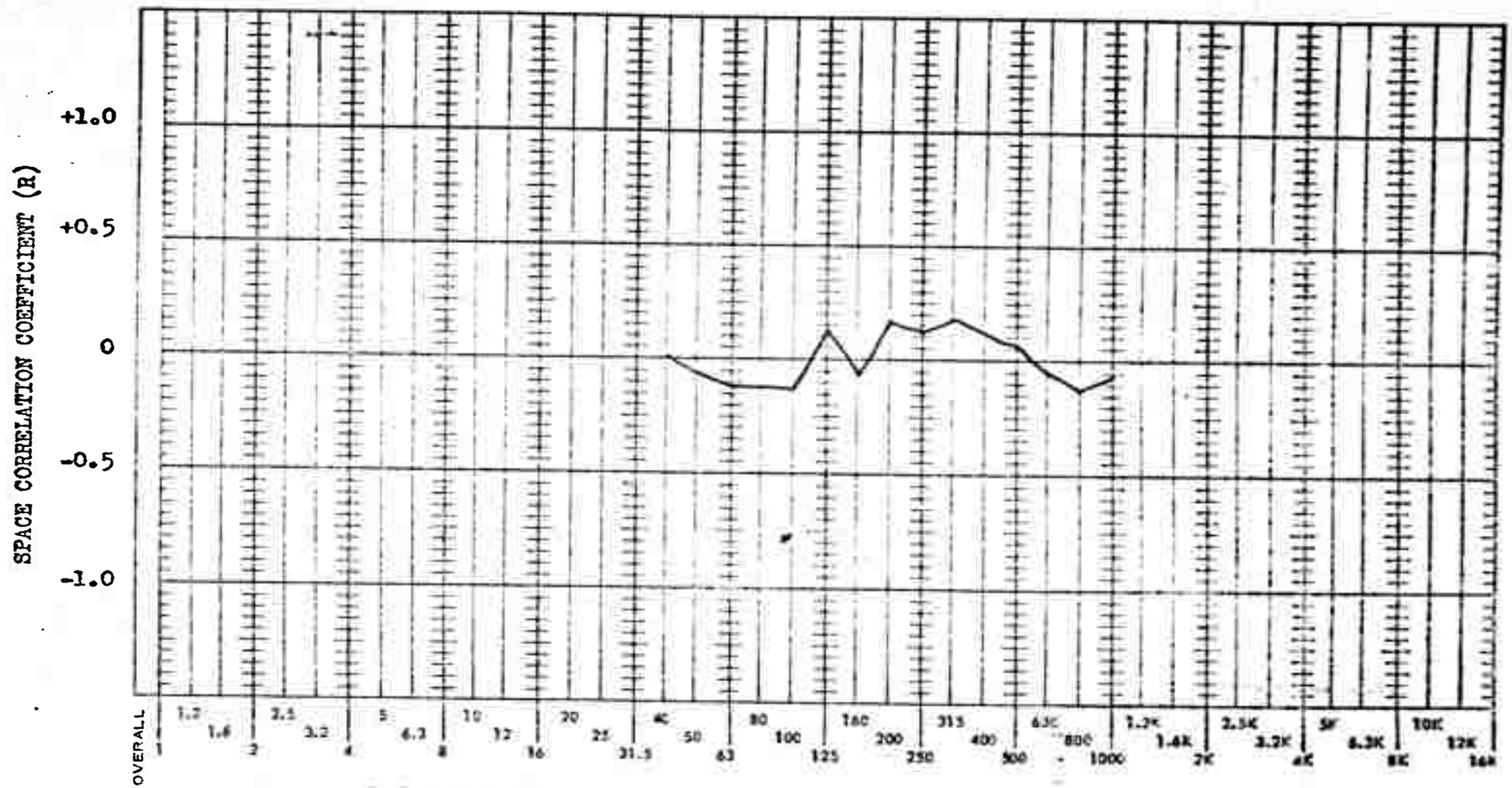
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 317, TEST POINT 12

CORRELATION NO. 407
MACH NO. 1.08
α 4
β 4

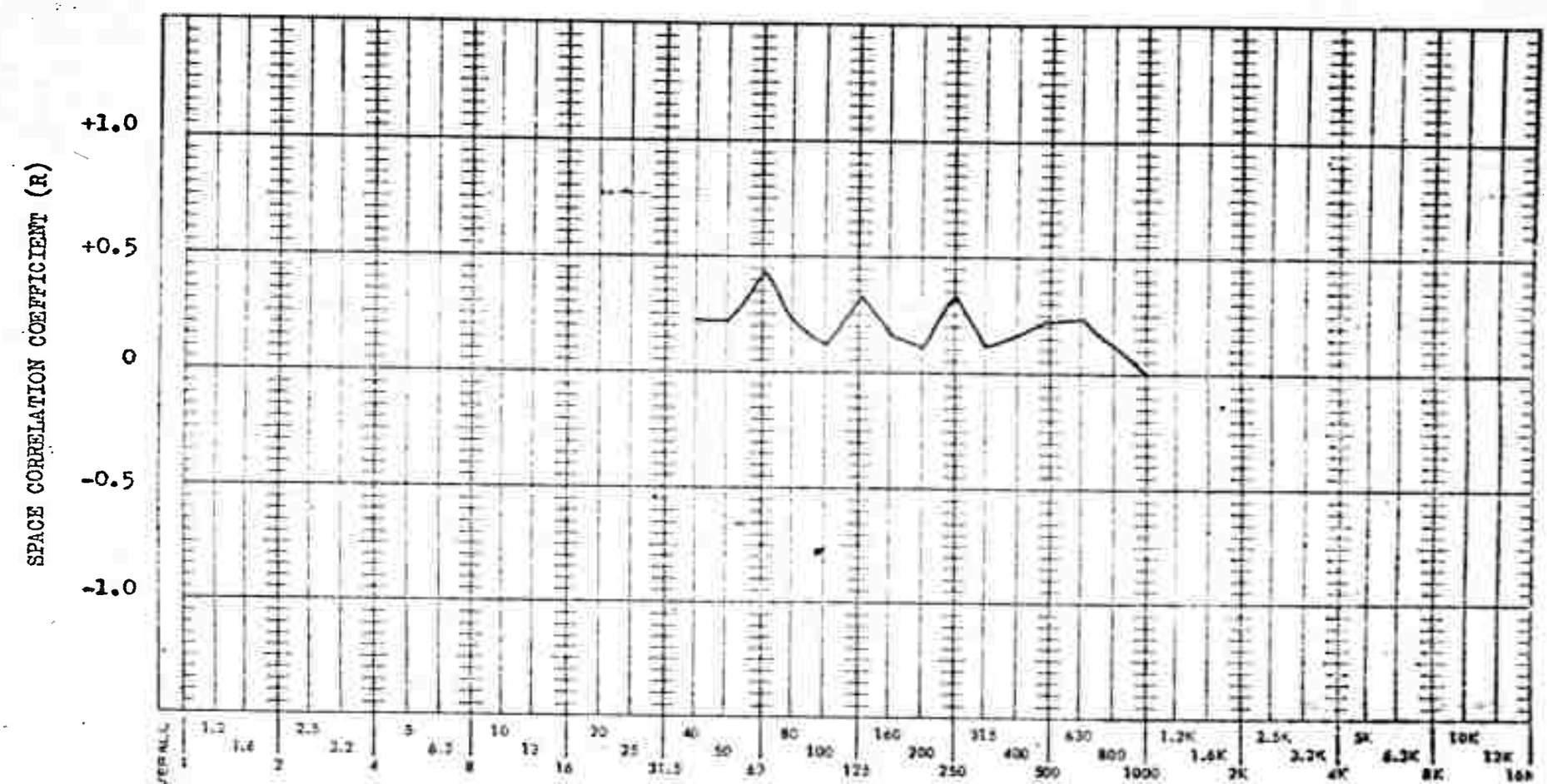
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 317, TEST POINT 12

CORRELATION NO. 108
MACH NO. 1.08
α +4
β -4

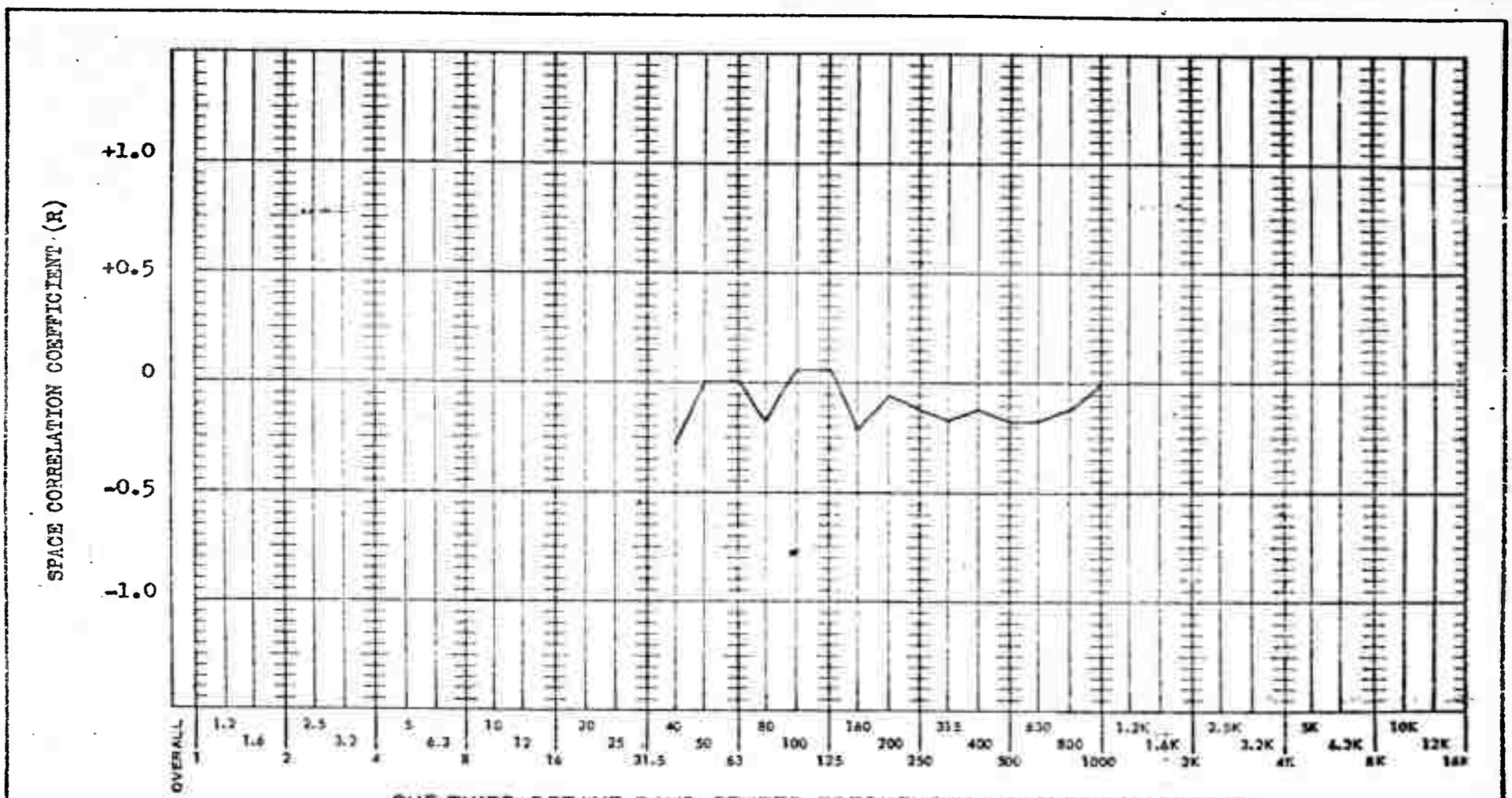
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 317, TEST POINT 12

CORRELATION NO. 502
MACH NO. 1.06
α 0
β -4

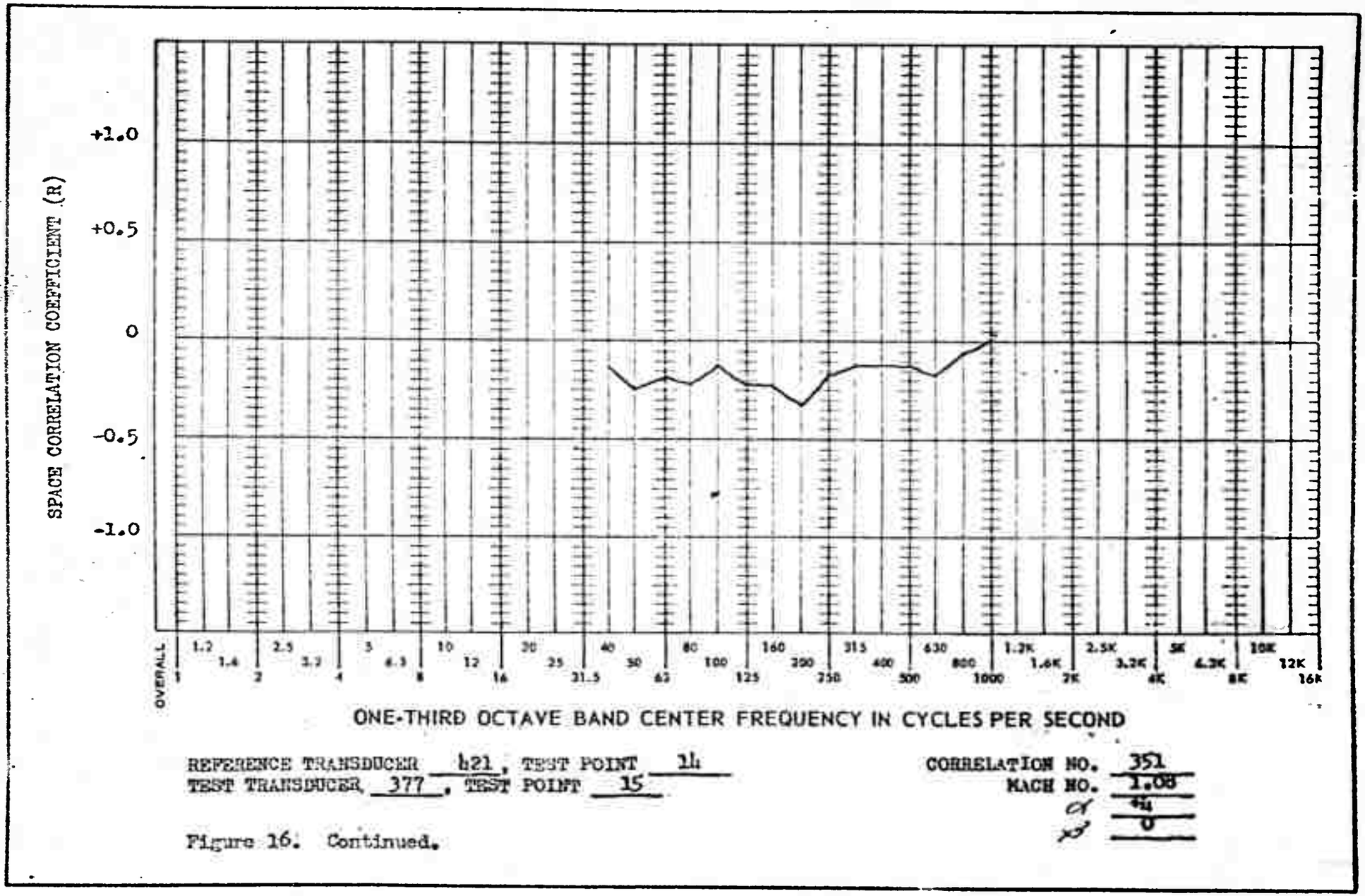
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 24
TEST TRANSDUCER 377, TEST POINT 15

CORRELATION NO. 321
MACH NO. 1.08
α +4
β 0

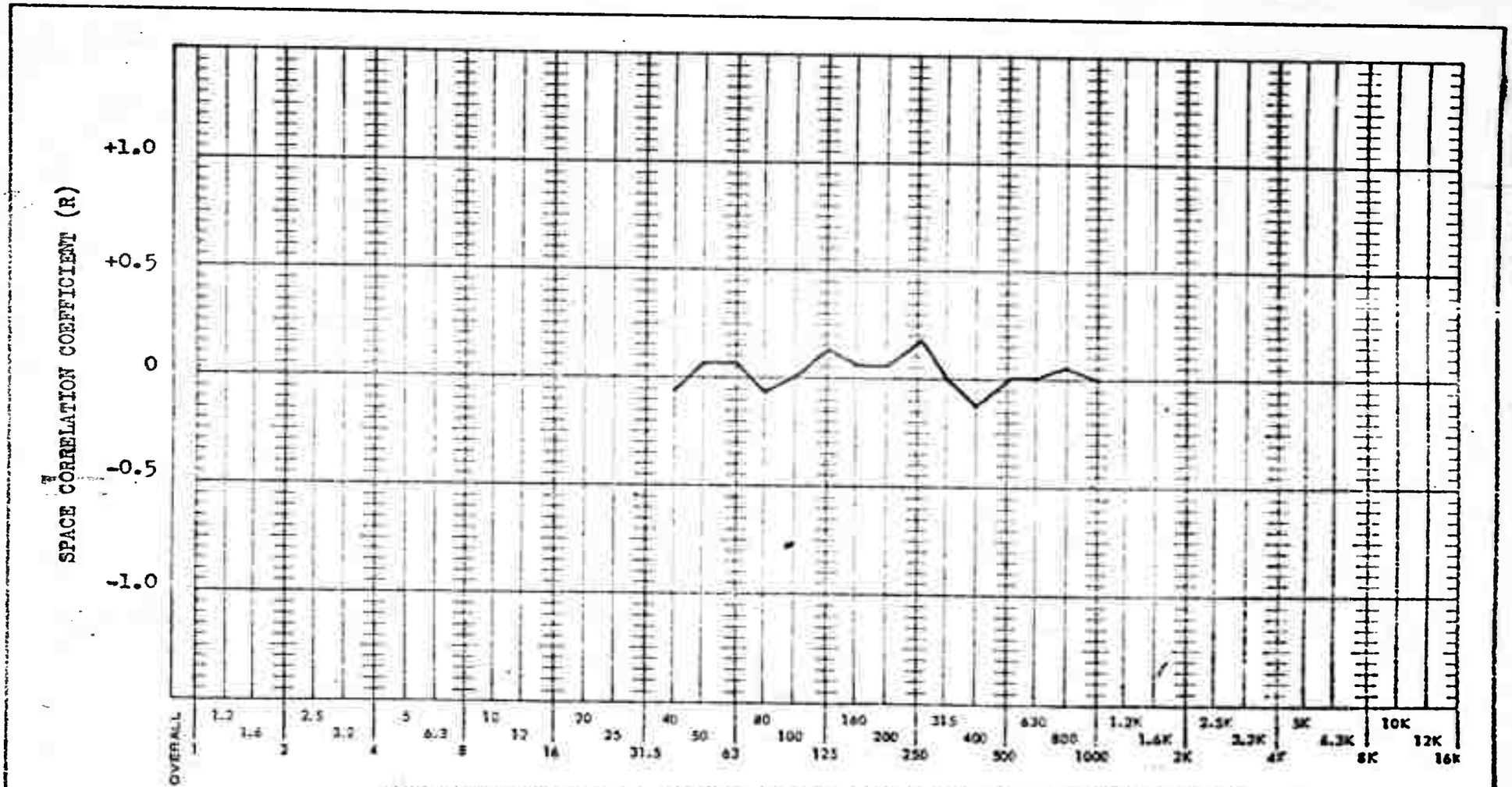
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 377, TEST POINT 15

CORRELATION NO. 351
MACH NO. 1.08
α 4
χ 0

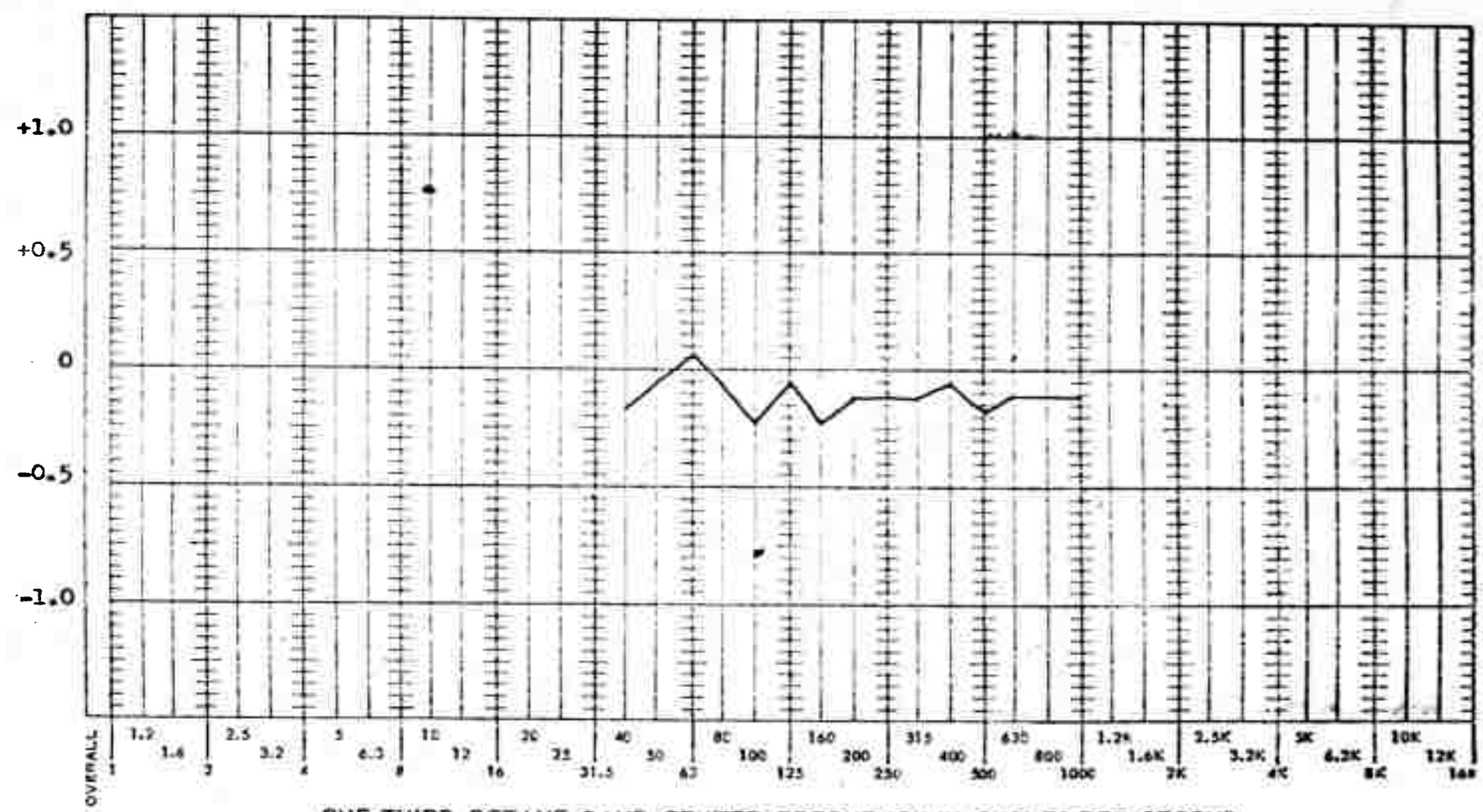
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 11
TEST TRANSDUCER 377, TEST POINT 15

CORRELATION NO. 407
MACH NO. 1.08
α 4
β 4

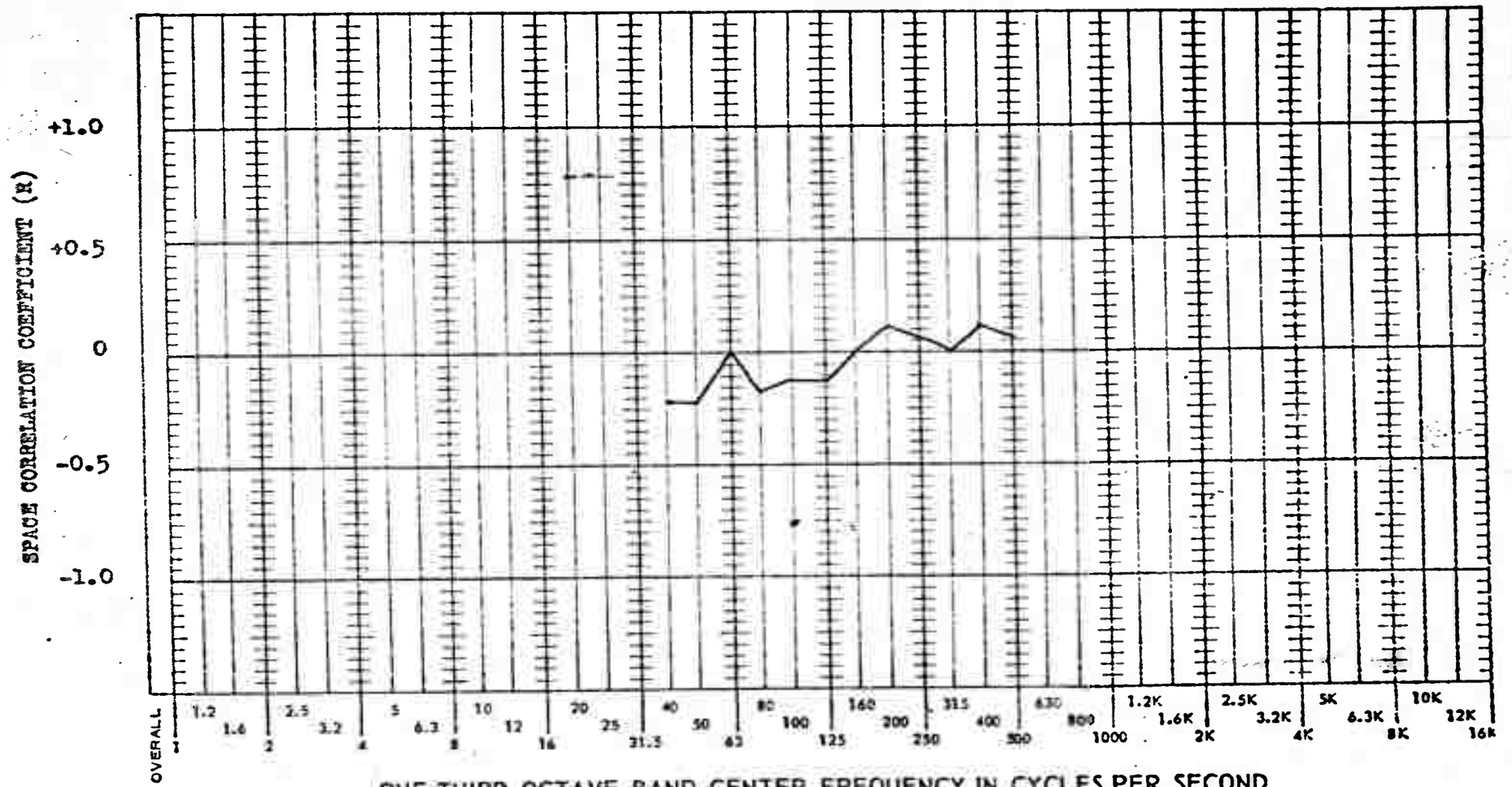
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 377, TEST POINT 15

CORRELATION NO. 108
MACH NO. 1.08
δ +4
δ -4

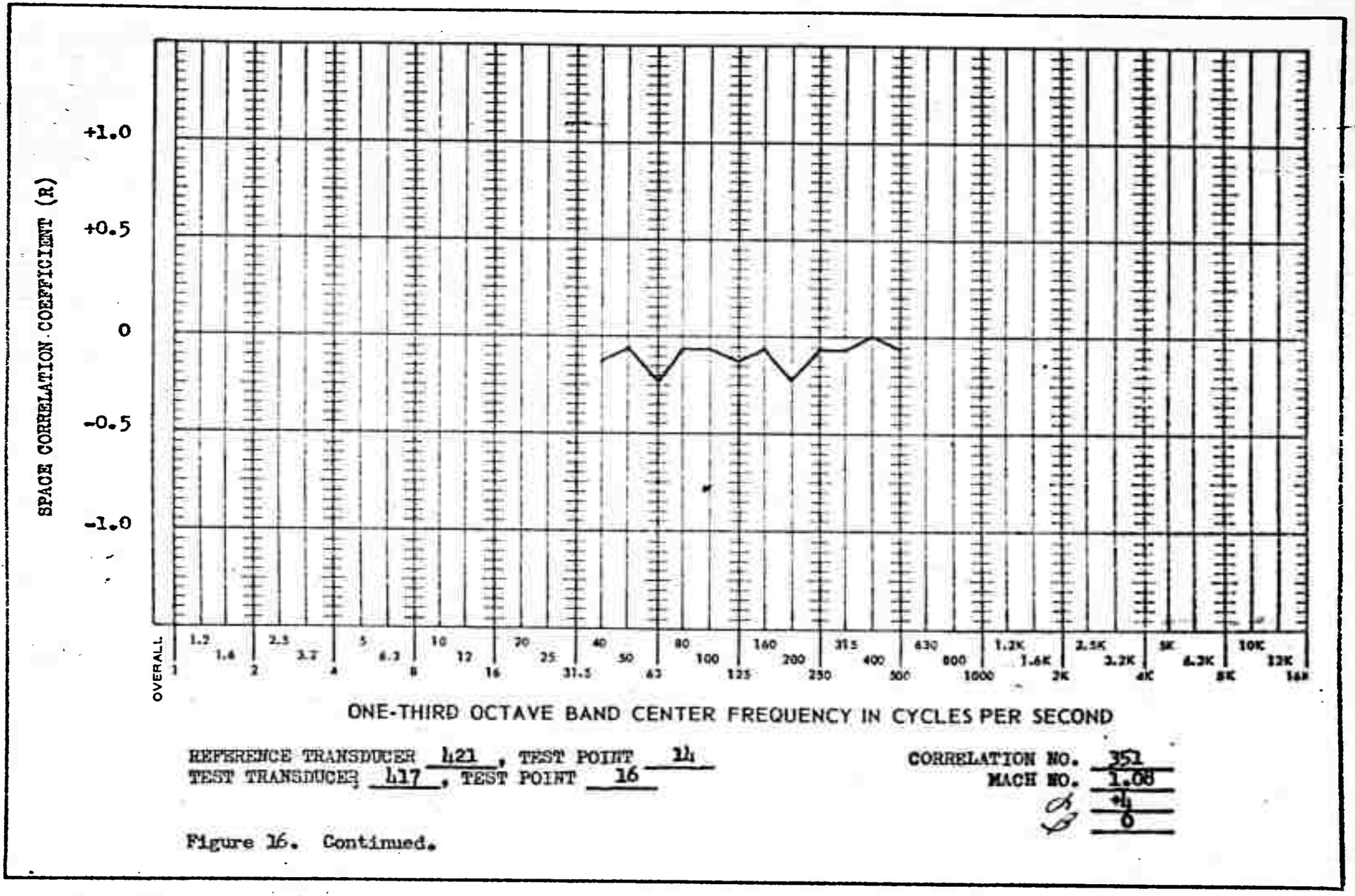
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 24
TEST TRANSDUCER 417, TEST POINT 16

CORRELATION NO. 307
MACH NO. 0.85
α -4
β 0

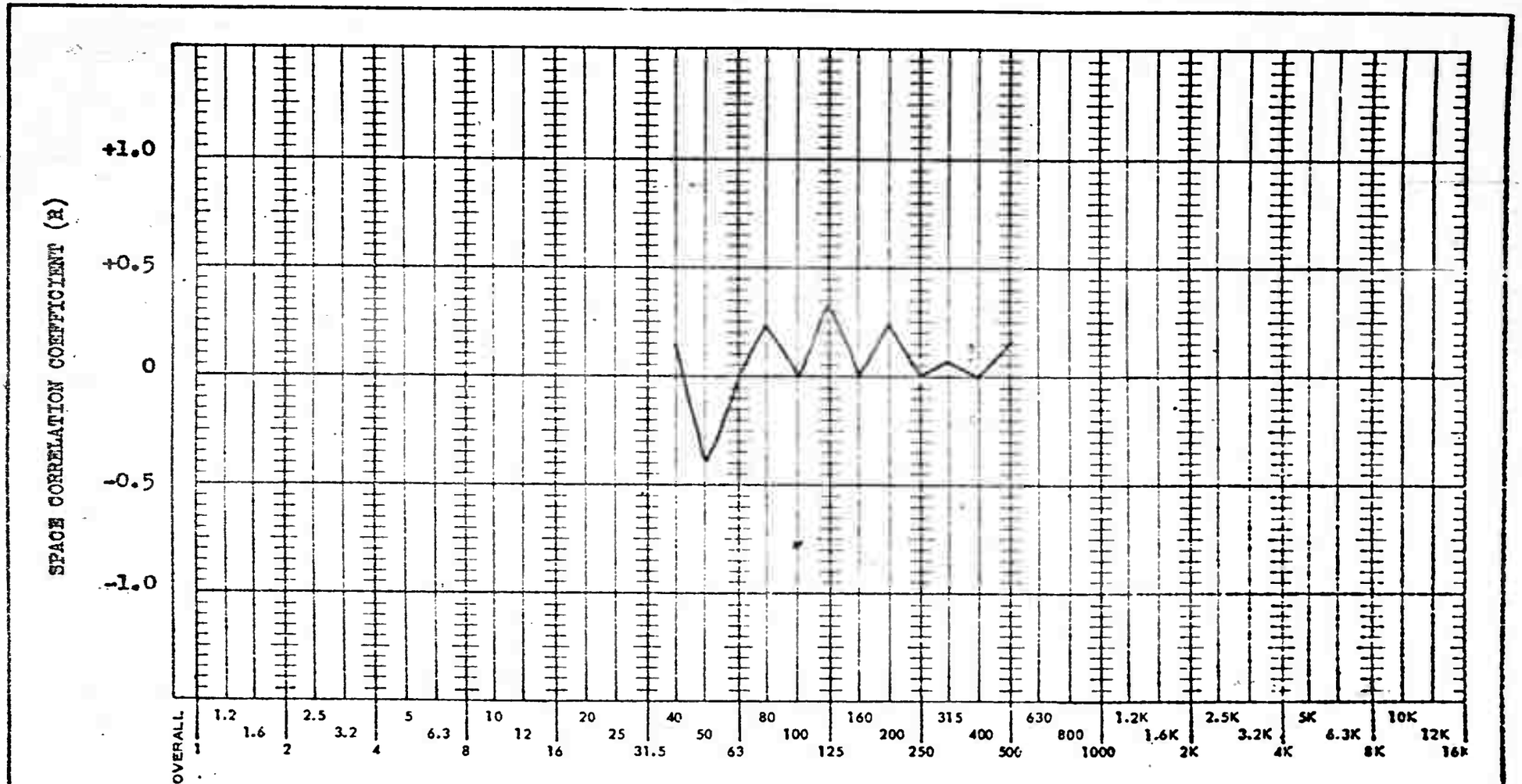
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 417, TEST POINT 16

CORRELATION NO. 351
MACH NO. 1.08
δ +4
δ 0

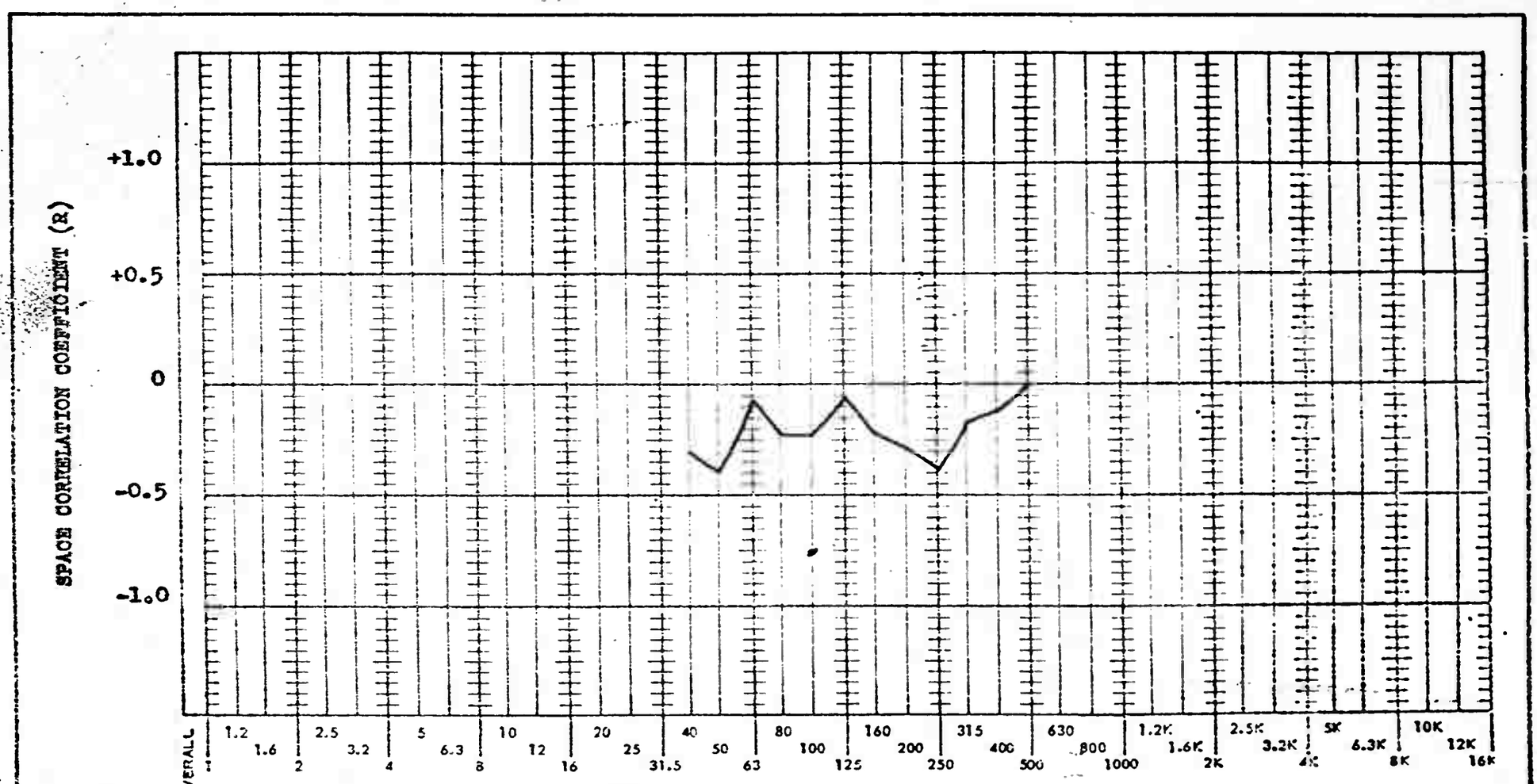
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 417, TEST POINT 16

CORRELATION NO. 407
MACH NO. 1.08
α 4
β 4

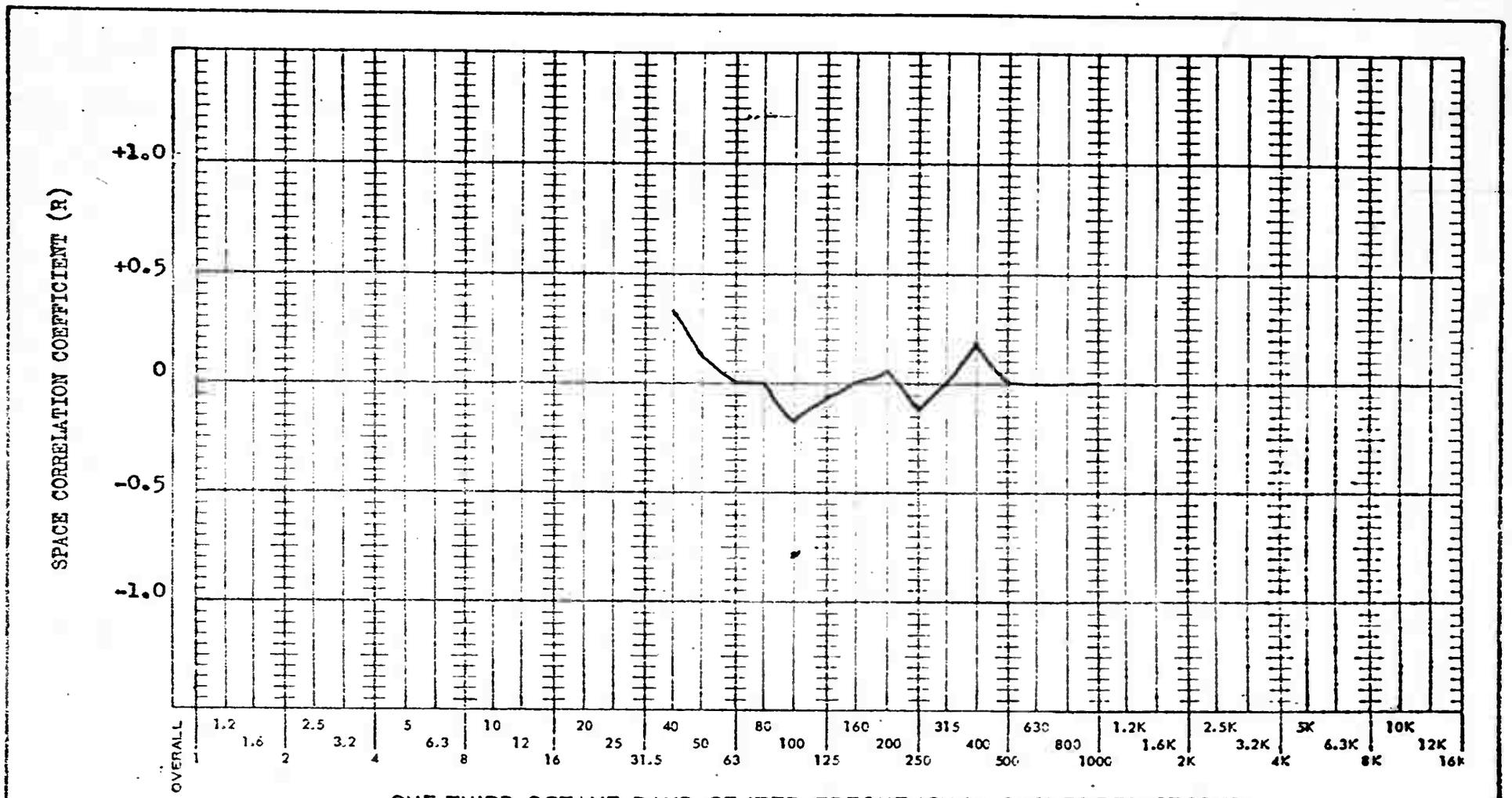
Figure 16. Continued.



REFERENCE TRANSDUCER 421, TEST POINT 14
TEST TRANSDUCER 417, TEST POINT 16

CORRELATION NO. 502
MACH NO. 1.08
α 0
β -4

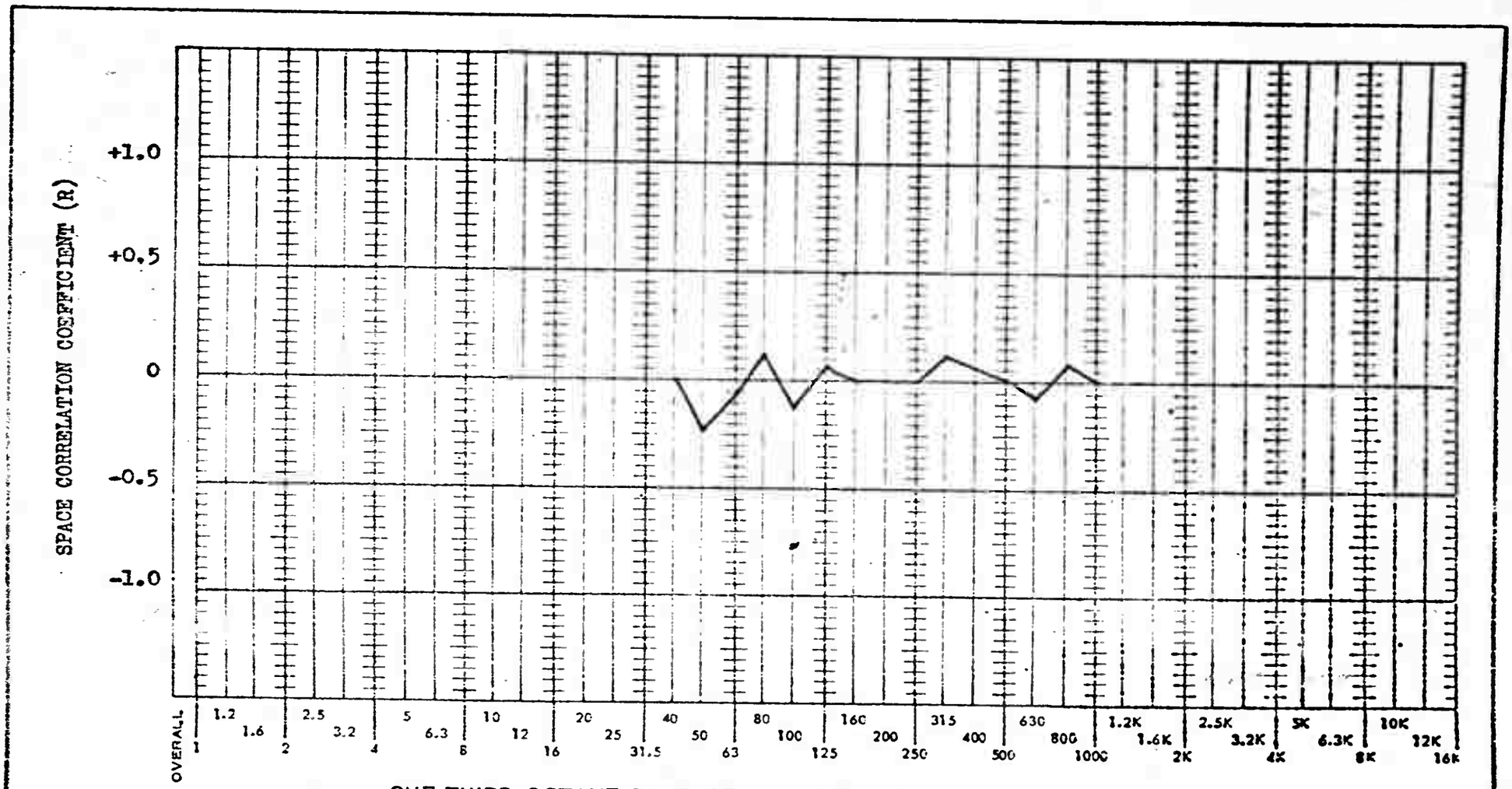
Figure 16. Continued.



REFERENCE TRANSDUCER 386, TEST POINT 27
TEST TRANSDUCER 385, TEST POINT 26

CORRELATION NO. 307
MACH NO. 0.85
α 4
β 0

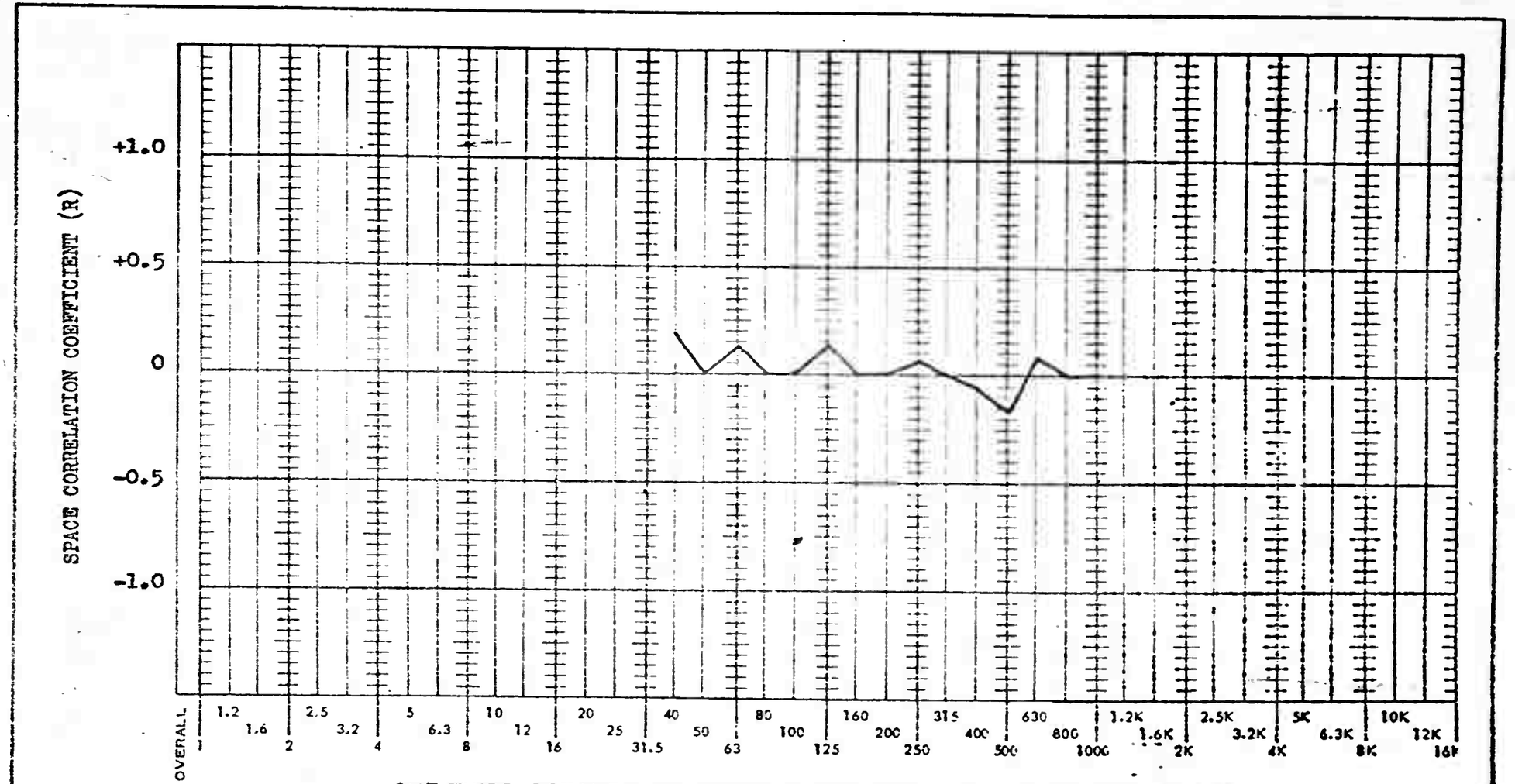
Figure 16. Continued.



REFERENCE TRANSDUCER 386, TEST POINT 27
TEST TRANSDUCER 385, TEST POINT 26

CORRELATION NO. 360
MACH NO. 0.9
α 0
β 4

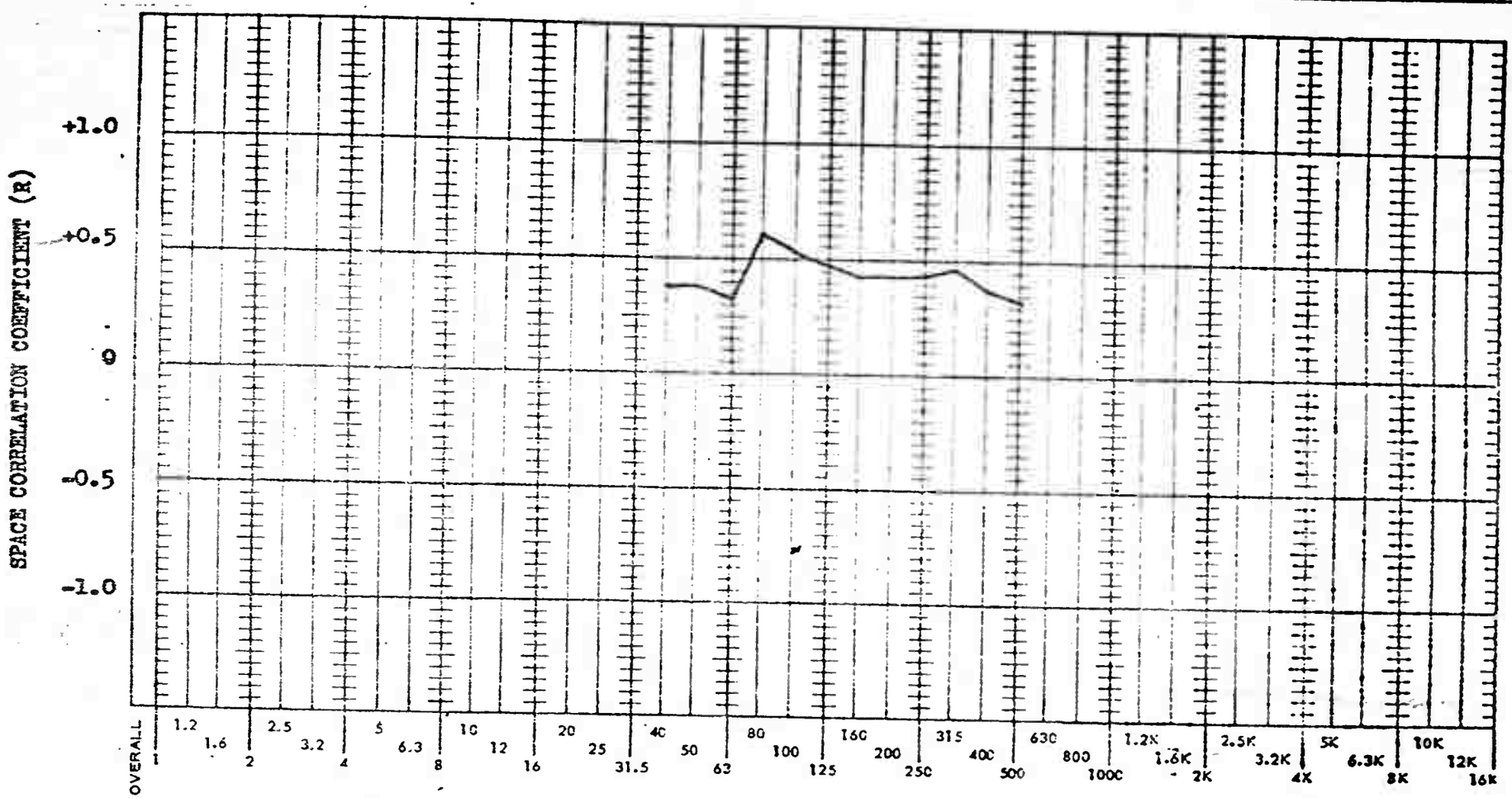
Figure 16. Continued.



REFERENCE TRANSDUCER 386, TEST POINT 27
TEST TRANSDUCER 385, TEST POINT 26

CORRELATION NO. 397
MACH NO. 0.8
α +4
β -4

Figure 16. Continued.



REFERENCE TRANSDUCER 386, TEST POINT 27
TEST TRANSDUCER 402, TEST POINT 28

CORRELATION NO. 307
MACH NO. 0.85
α 4
β 0

Figure 16. Continued.

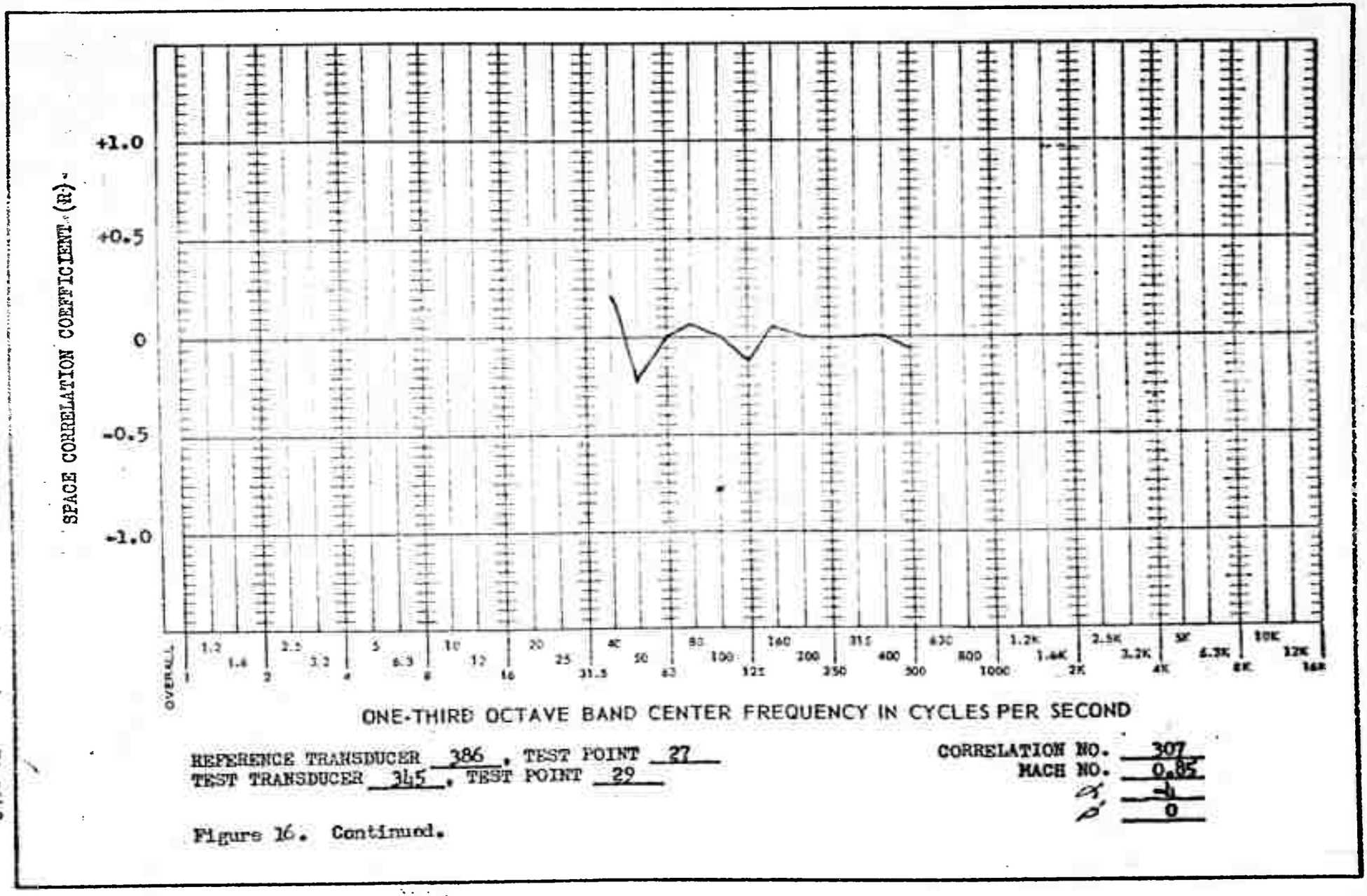


Figure 16. Continued.

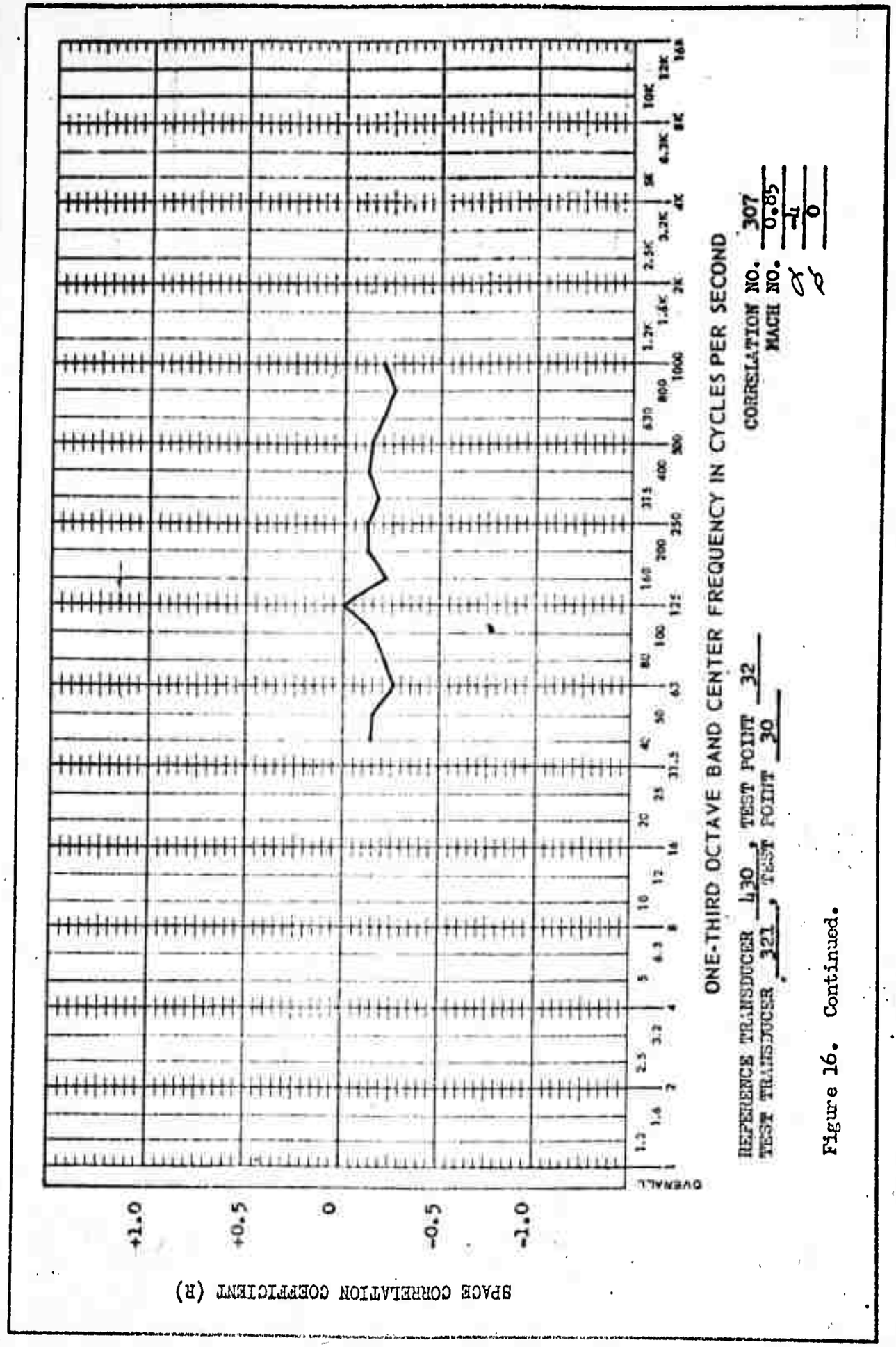
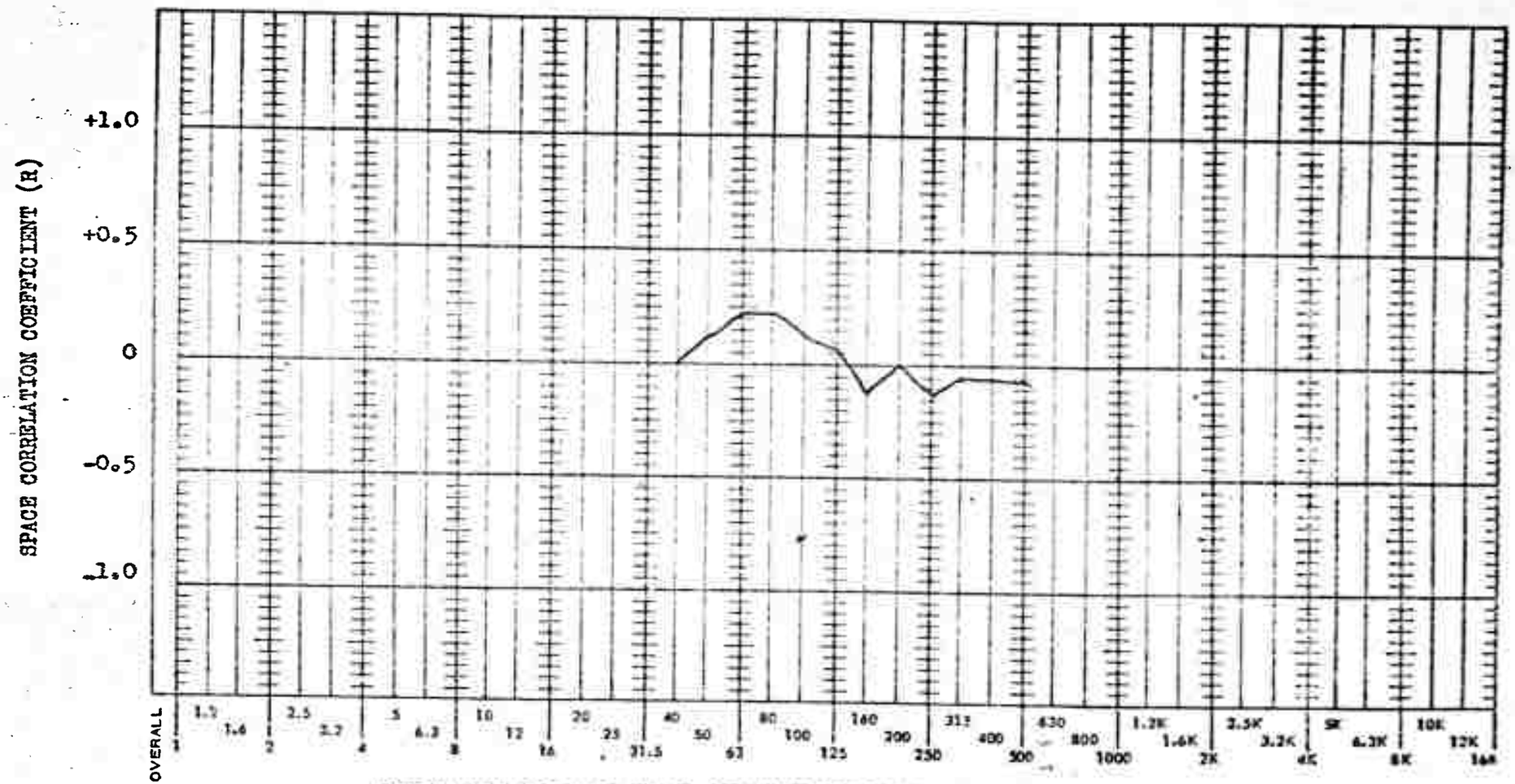


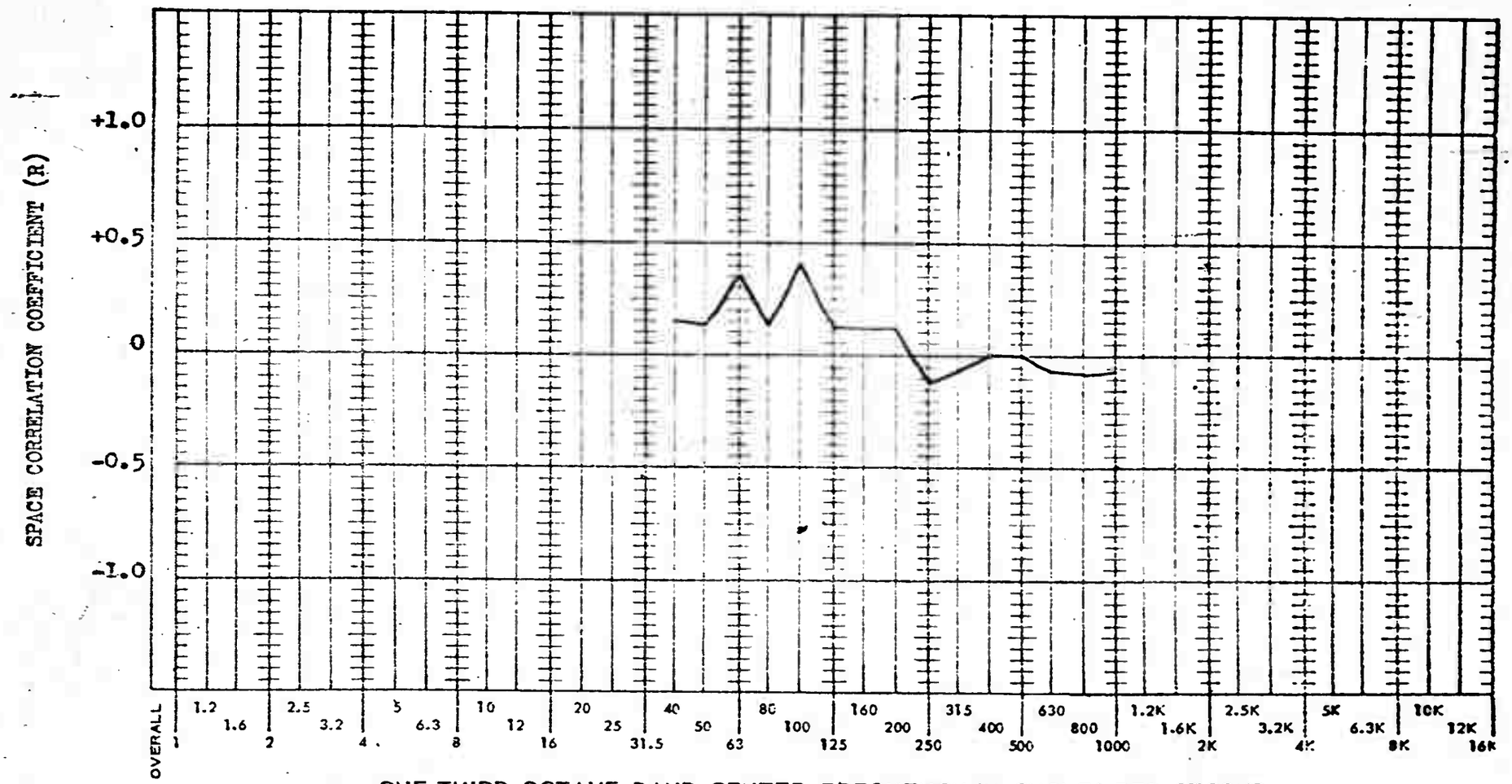
Figure 16. Continued.



REFERENCE TRANSDUCER 430, TEST POINT 32
TEST TRANSDUCER 338, TEST POINT 21

CORRELATION NO. 307
MACH NO. 0.85
α -1
β 0

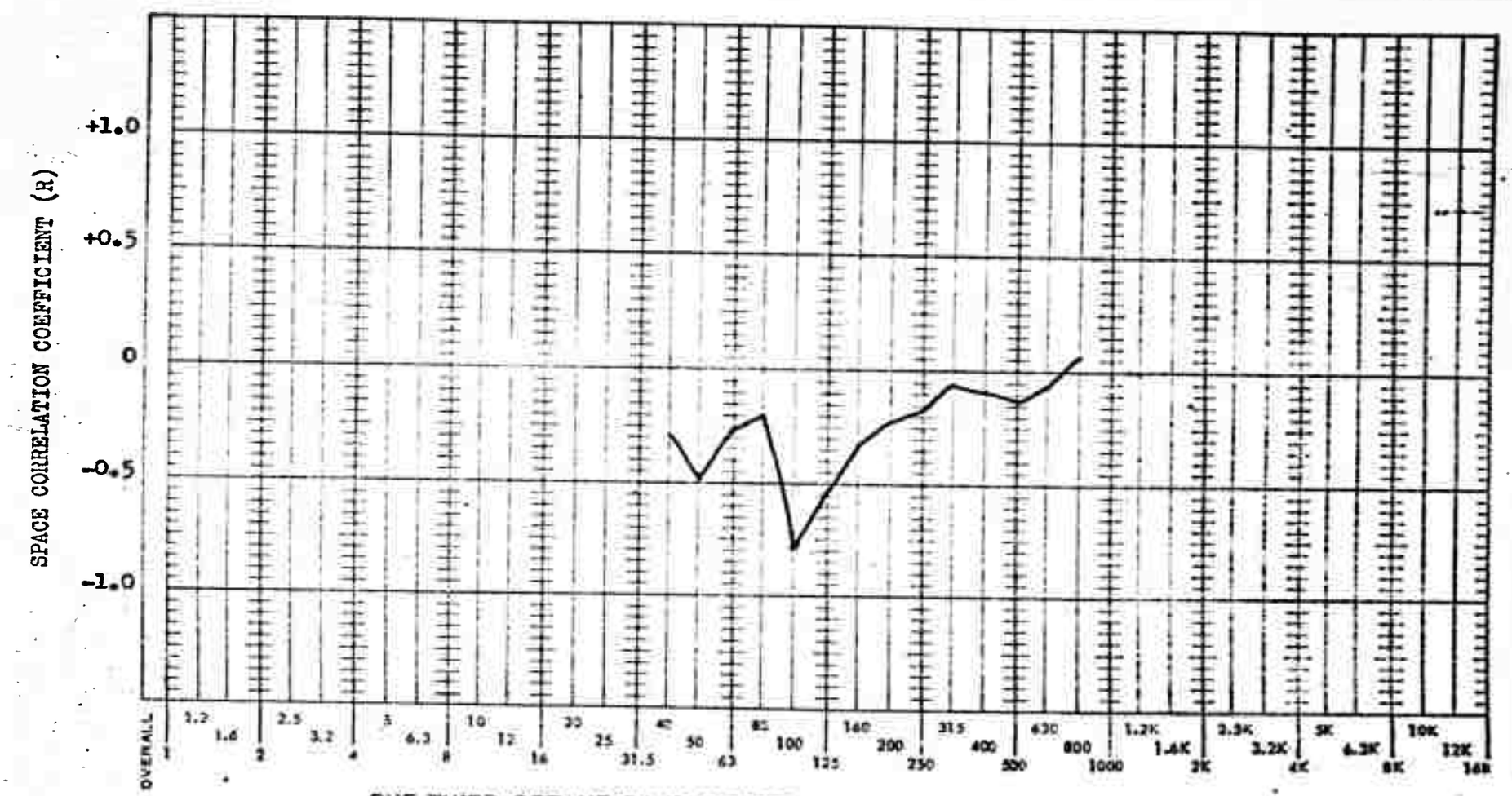
Figure 16. Continued.



REFERENCE TRANSDUCER 330, TEST POINT 32
TEST TRANSDUCER 321, TEST POINT 30

CORRELATION NO. 357
MACH NO. 0.85
α 0
β 4

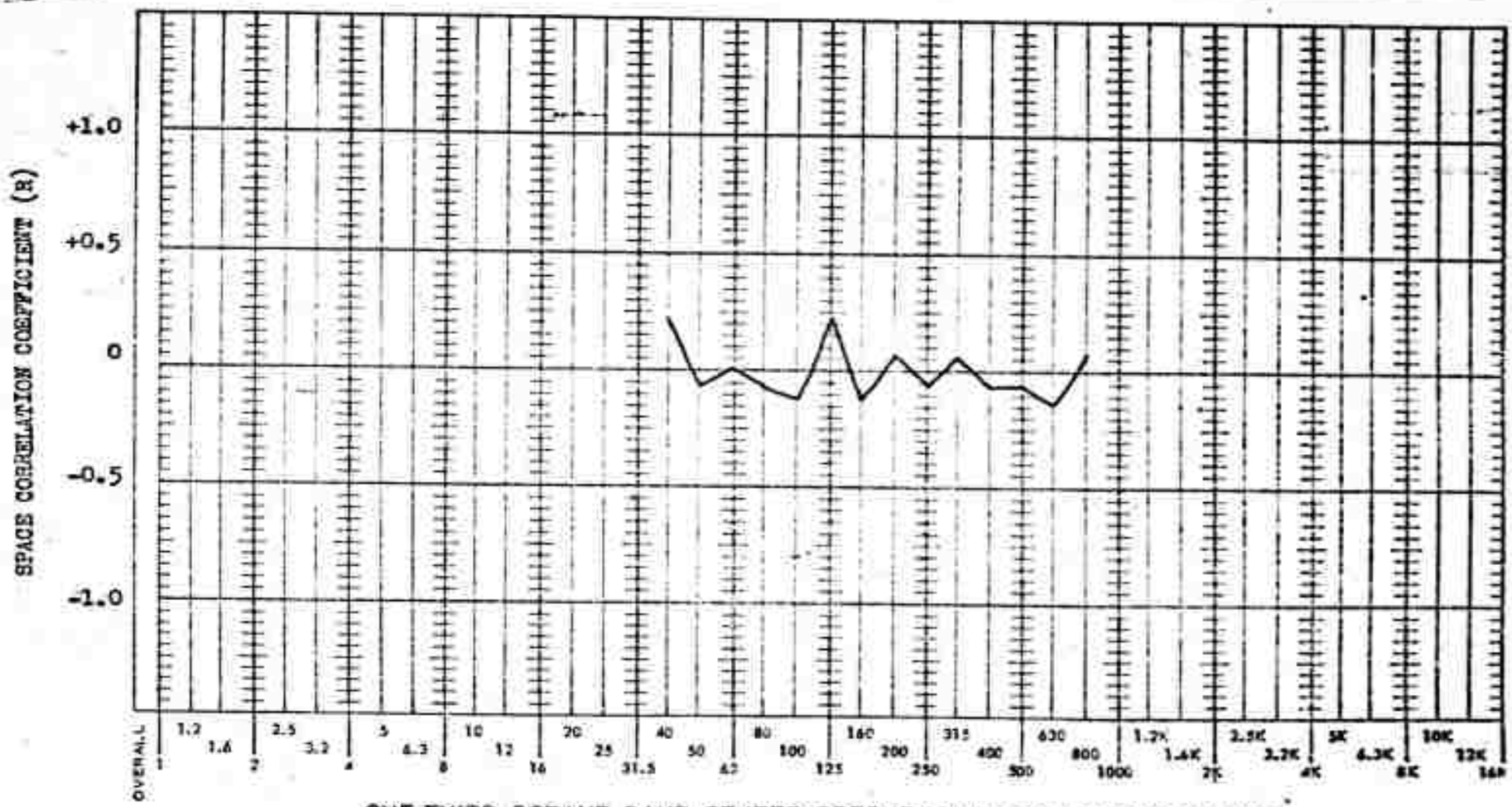
Figure 16. Continued.



REFERENCE TRANSDUCER 405, TEST POINT 32
TEST TRANSDUCER 321, TEST POINT 30

CORRELATION NO. 397
MACH NO. 0.6
α +4
β -4

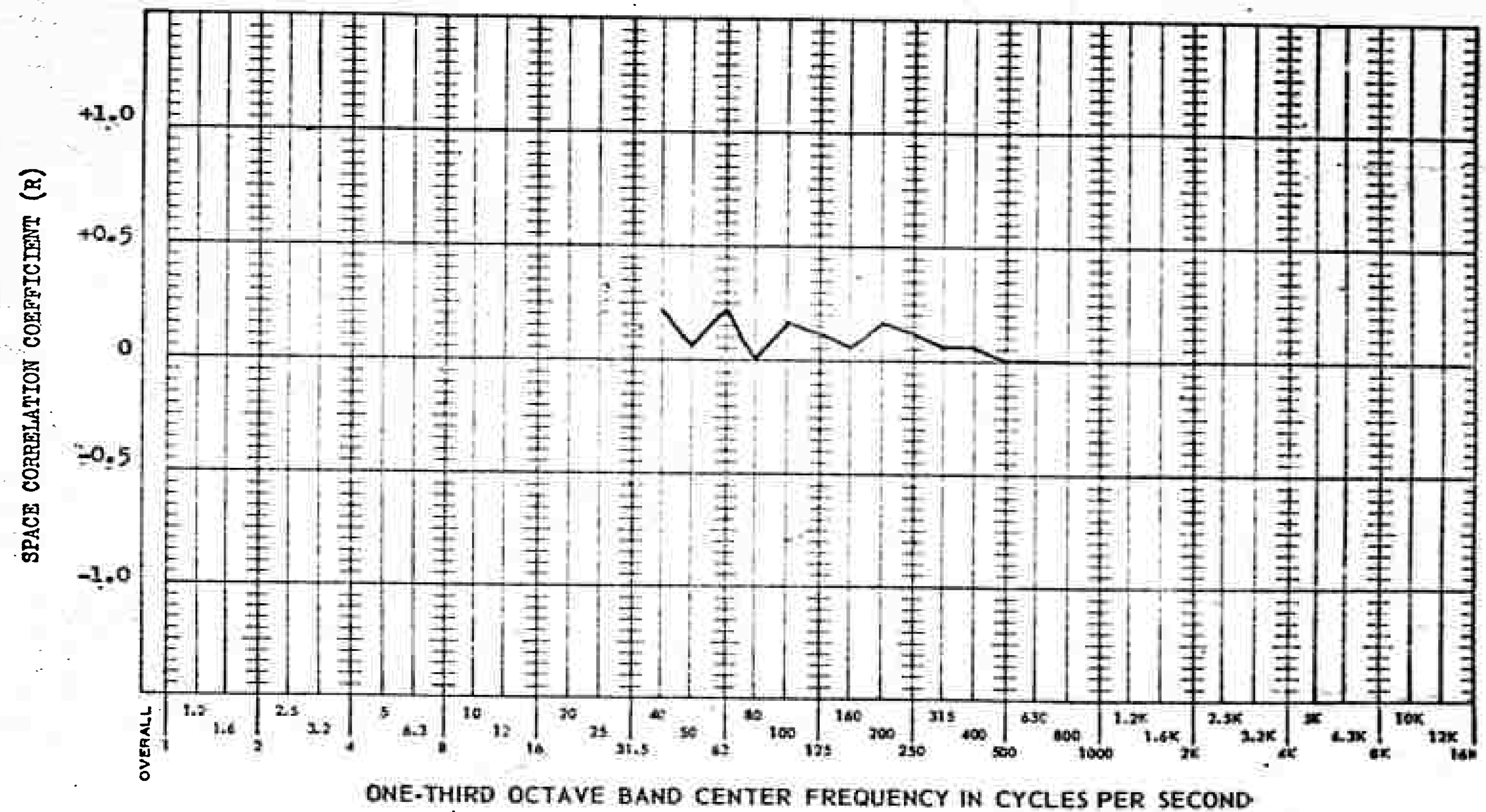
Figure 16. Continued.



REFERENCE TRANSDUCER 405, TEST POINT 32
TEST TRANSDUCER 321, TEST POINT 30

CORRELATION NO. 415
MACH NO. 0.9
σ -4
ρ +4

Figure 16. Continued.



REFERENCE TRANSDUCER 430, TEST POINT 32
TEST TRANSDUCER 443, TEST POINT 31

CORRELATION NO. 307
MACH NO. 0.85
α -4
β 0

Figure 16. Continued.

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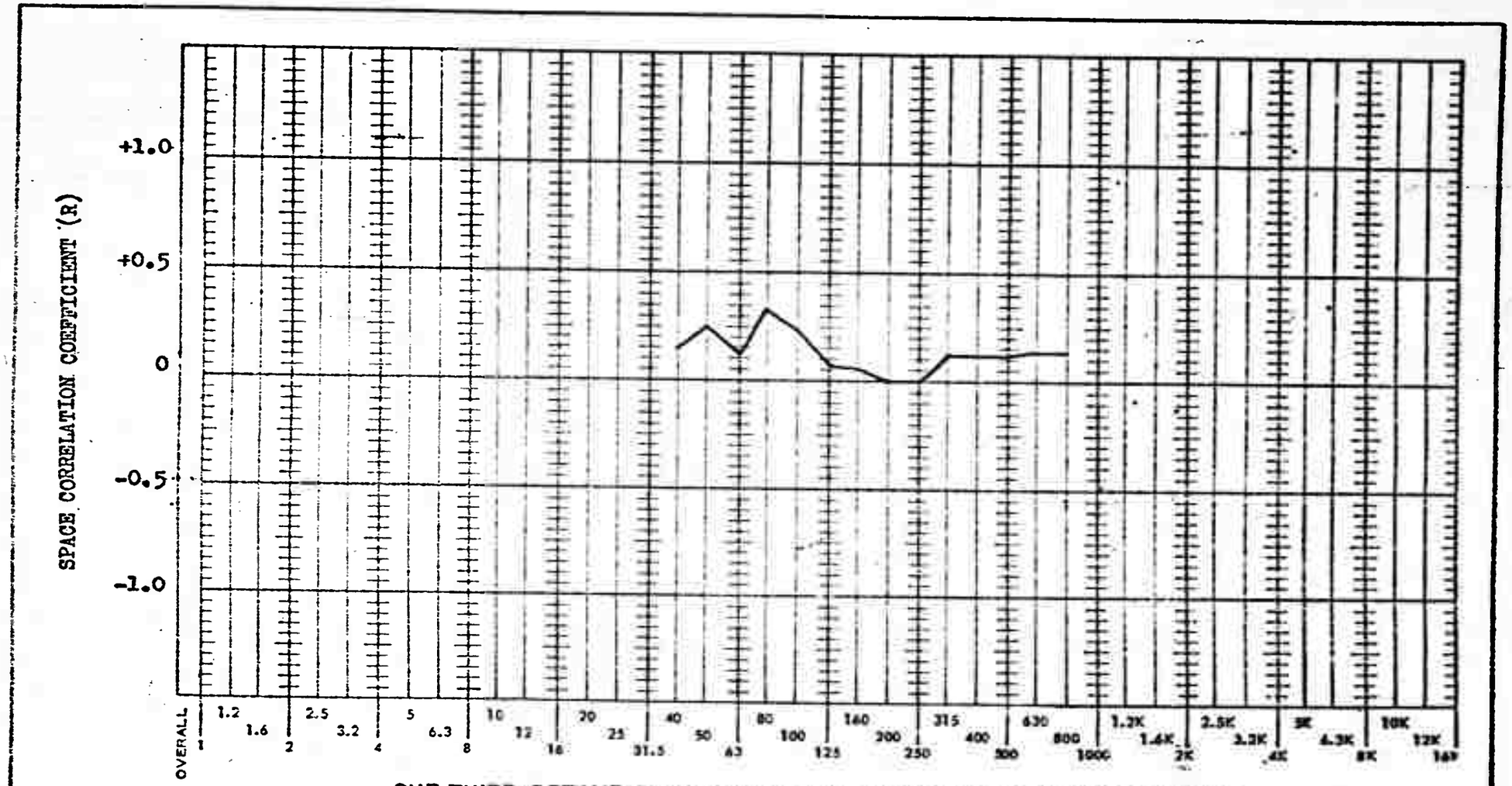
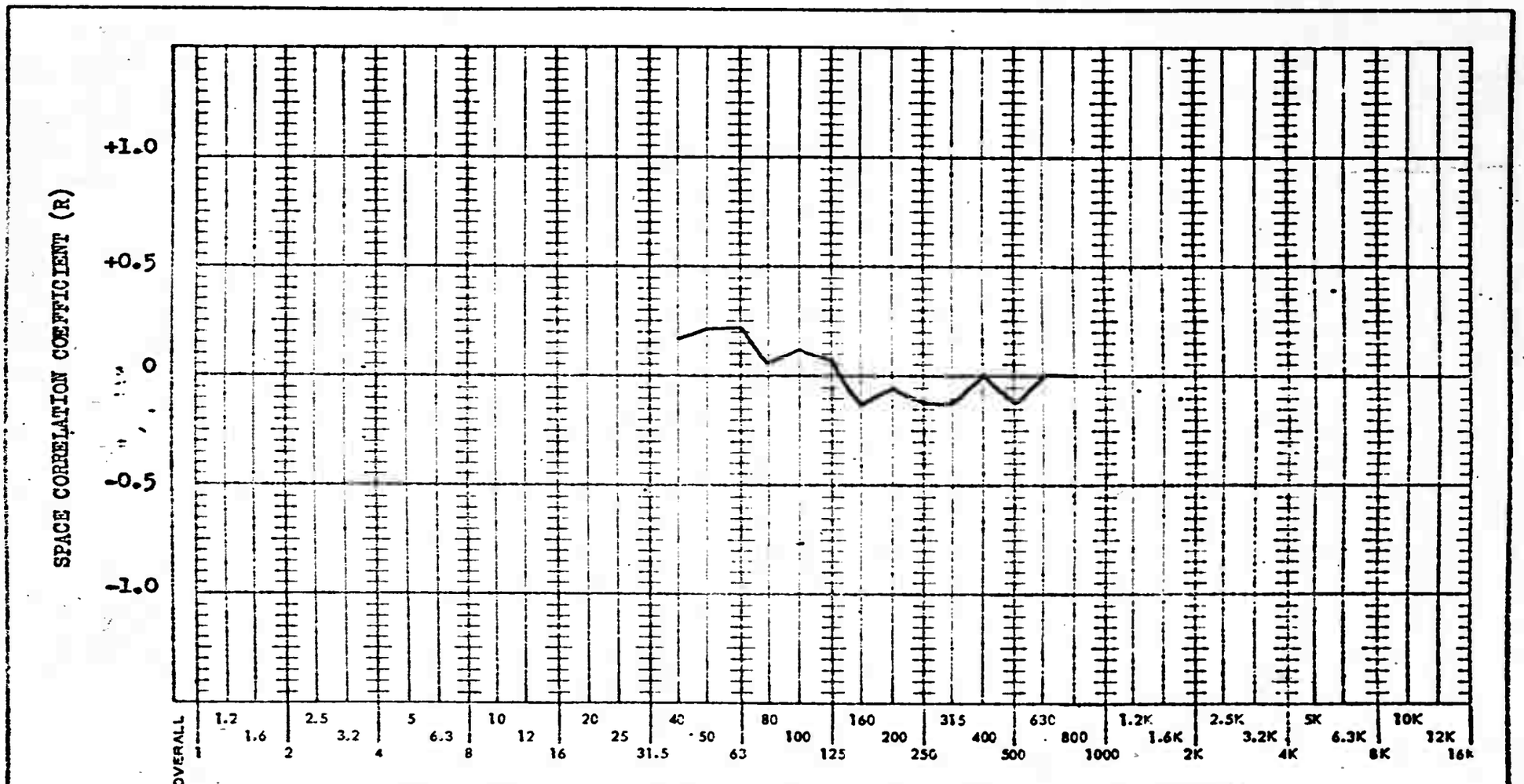


REFERENCE TRANSDUCER 330, TEST POINT 32
TEST TRANSDUCER 443, TEST POINT 31

CORRELATION NO. 357
MACH NO. 0.85
α 0
β 4

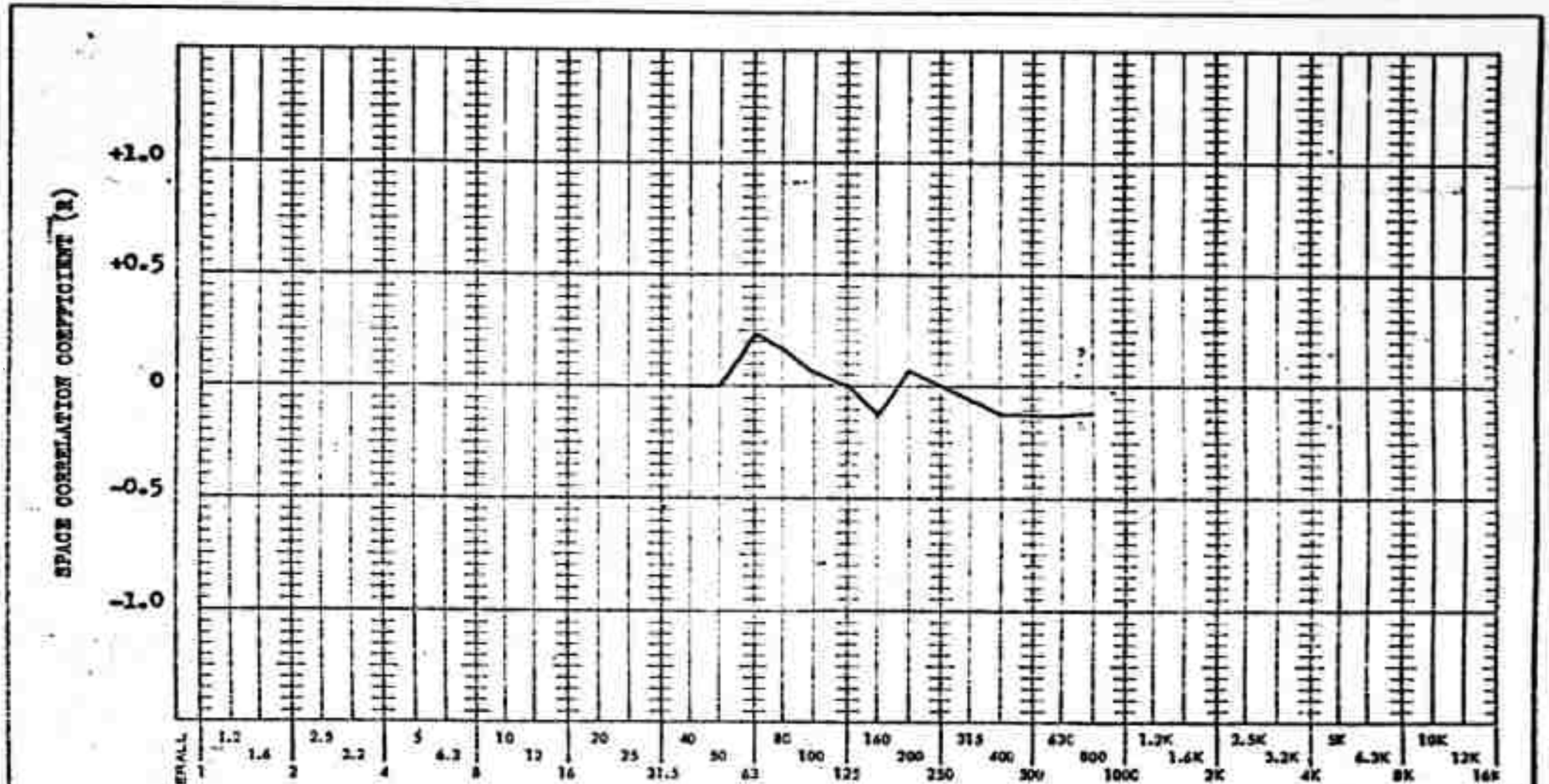
Figure 16. Continued.



REFERENCE TRANSDUCER 430, TEST POINT 32
TEST TRANSDUCER 359, TEST POINT 34

CORRELATION NO. 307
MACH NO. 0.85
α -4
β 0

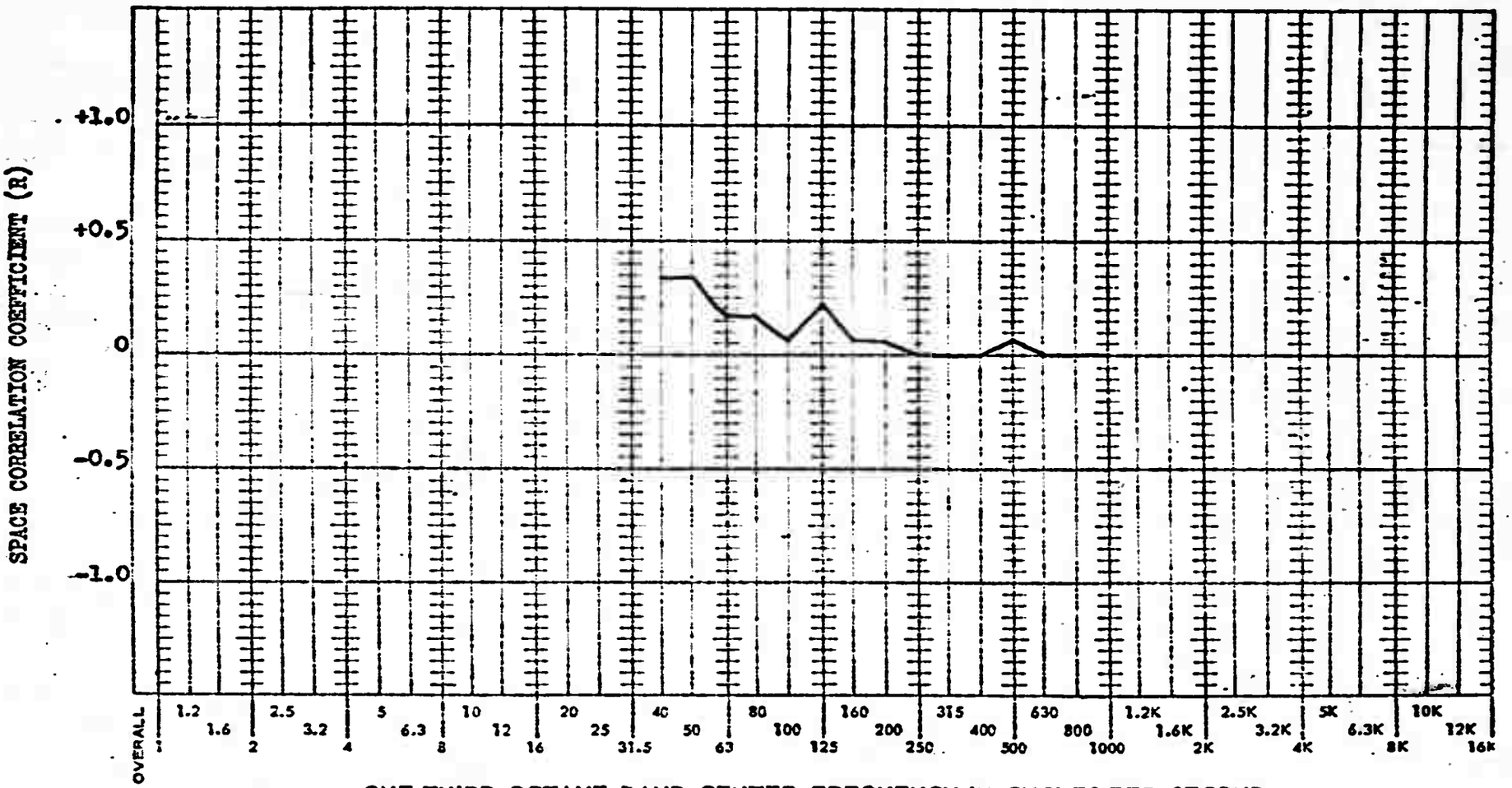
Figure 16. Continued.



REFERENCE TRANSDUCER 330, TEST POINT 32
TEST TRANSDUCER 359, TEST POINT 34

CORRELATION NO. 357
MACH NO. 0.85
ϕ 0
ξ -4

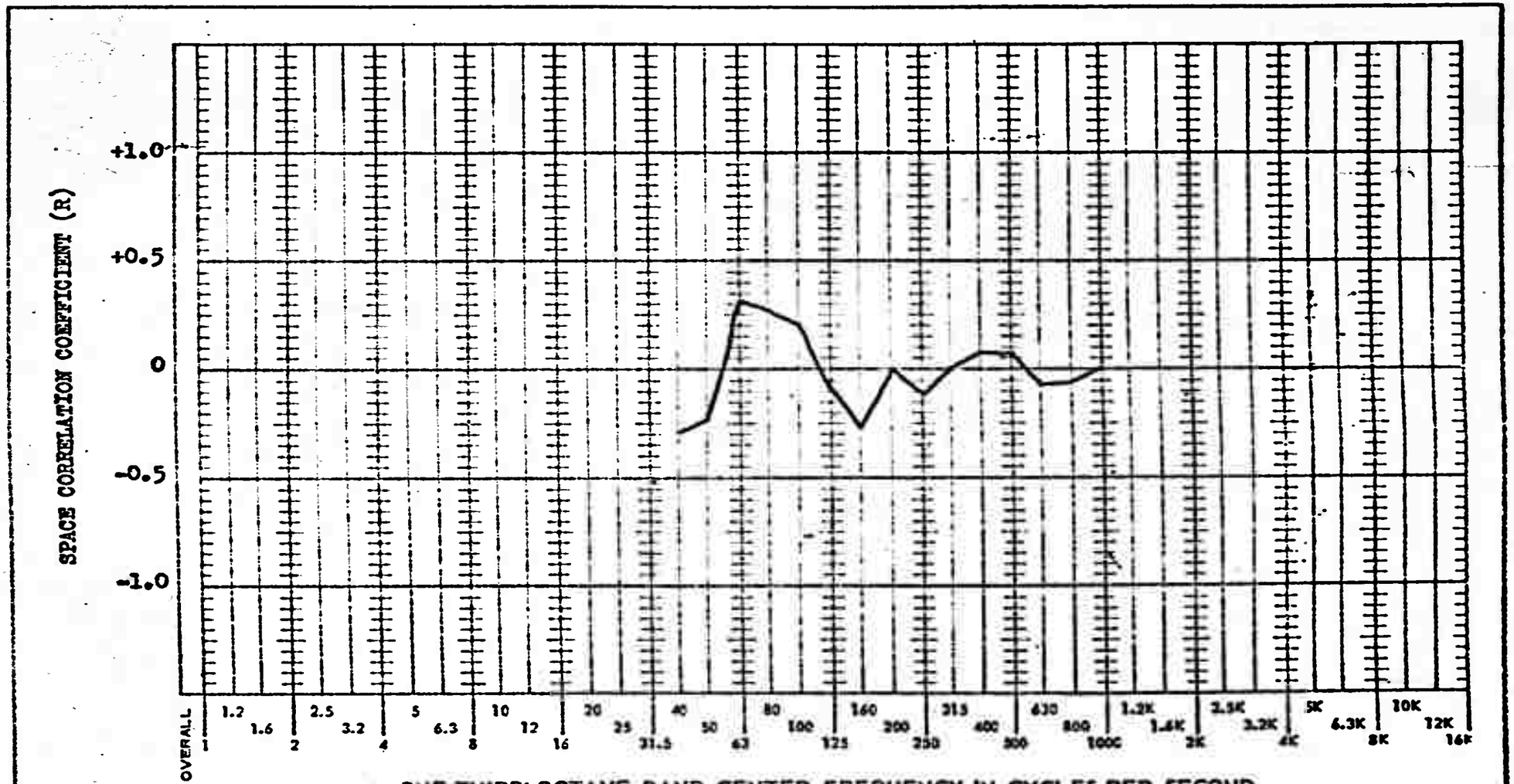
Figure 16. Continued.



REFERENCE TRANSDUCER 430, TEST POINT 32
TEST TRANSDUCER 303, TEST POINT 35

CORRELATION NO. 307
MACH NO. 0.85
α -4
β 0

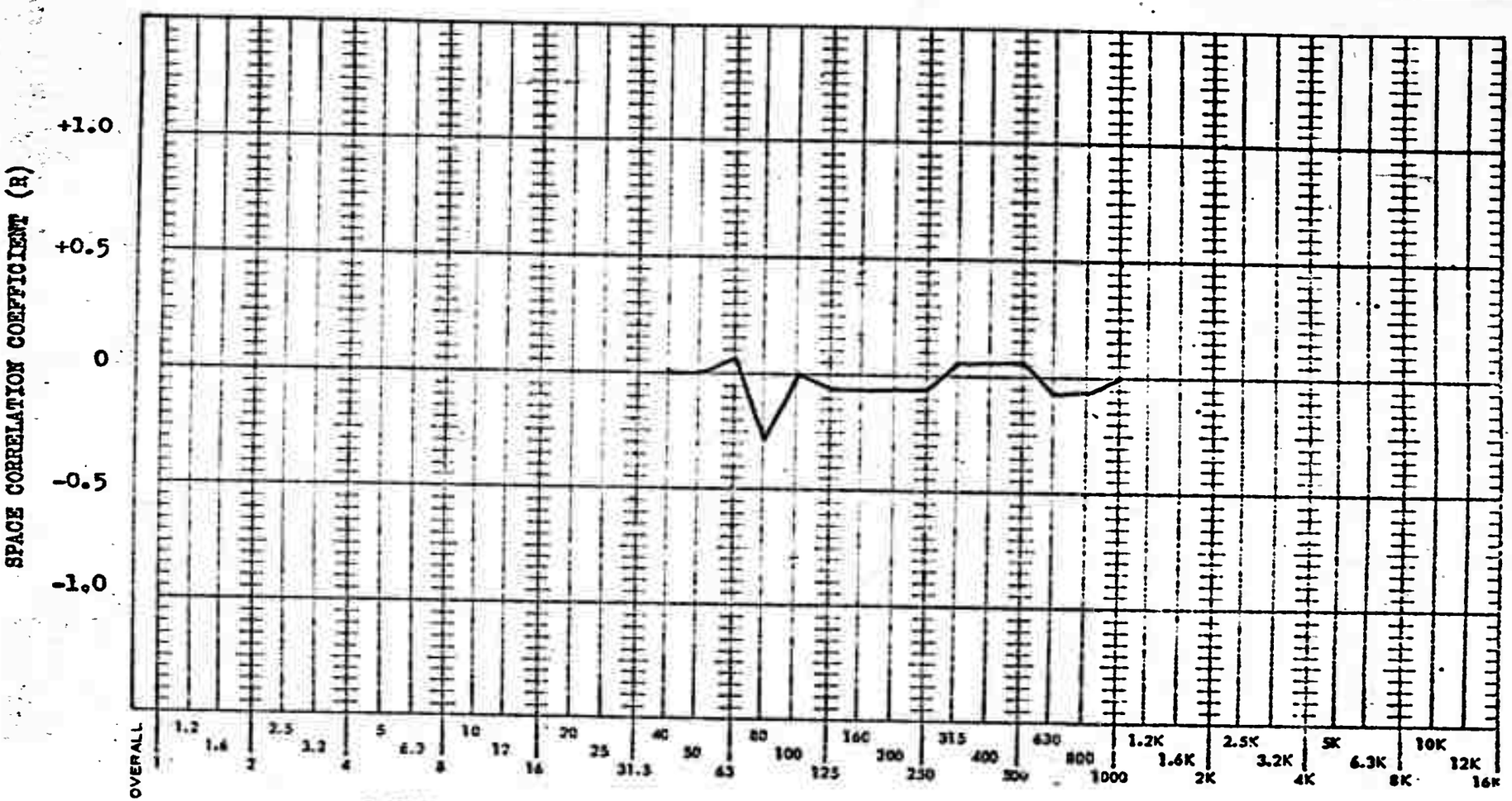
Figure 16. Continued.



REFERENCE TRANSDUCER 405, TEST POINT 32
TEST TRANSDUCER 303, TEST POINT 35

CORRELATION NO. 397
MACH NO. 0.8
α 4°
β 4°

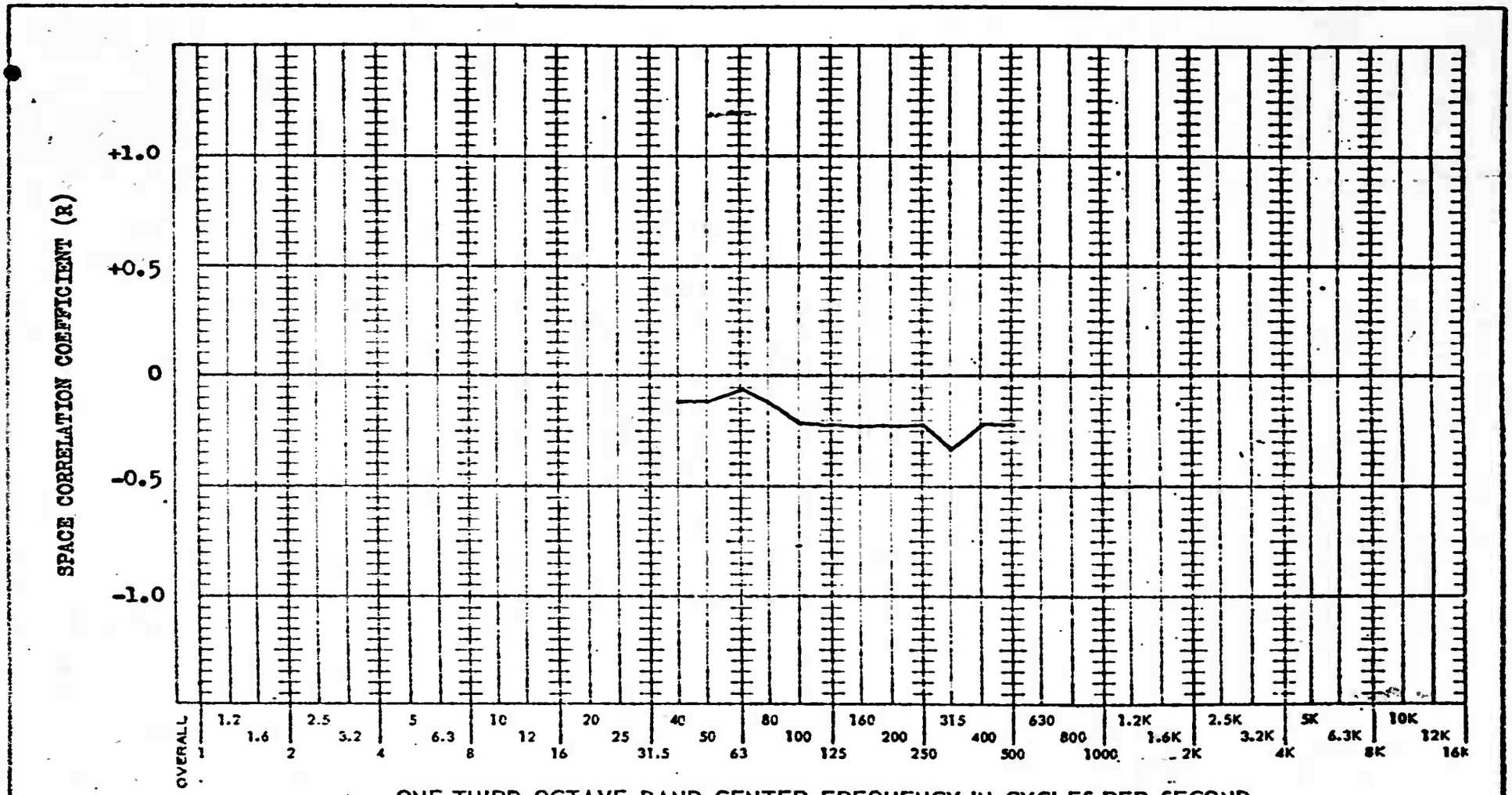
Figure 16. Continued.



REFERENCE TRANSDUCER 405, TEST POINT 32
TEST TRANSDUCER 303, TEST POINT 35

CORRELATION NO. 415
MACH NO. 0.9
γ -4
β +4

Figure 16. Continued.

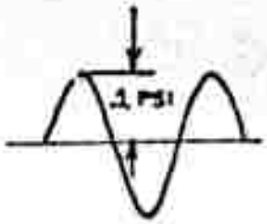


REFERENCE TRANSDUCER 430, TEST POINT 32
TEST TRANSDUCER 339, TEST POINT 36

CORRELATION NO. 307
MACH NO. 0.85
α -4
β 0

Figure 16. Space correlation coefficients (Concluded).

FIG. 17 a



150 DB (1000 CPS ACOUSTIC REFERENCE SIGNAL)

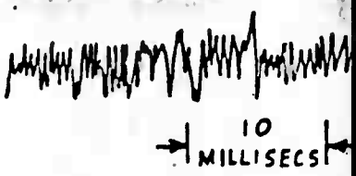
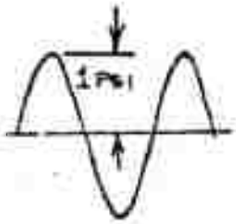


FIG. 17 b



170 DB (1000 CPS ACOUSTIC REFERENCE SIGNAL)

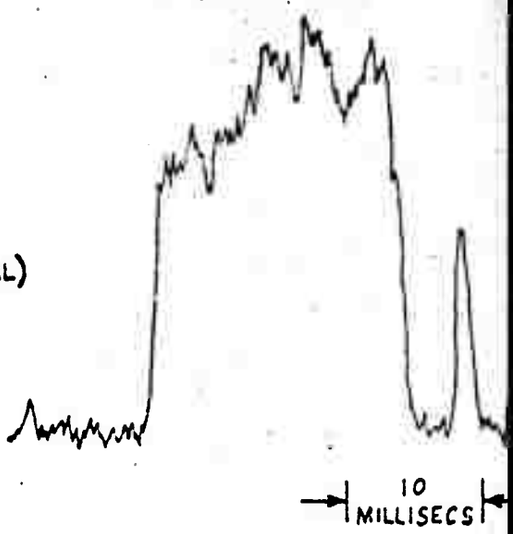
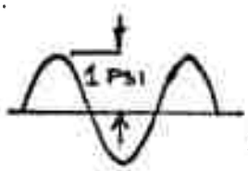
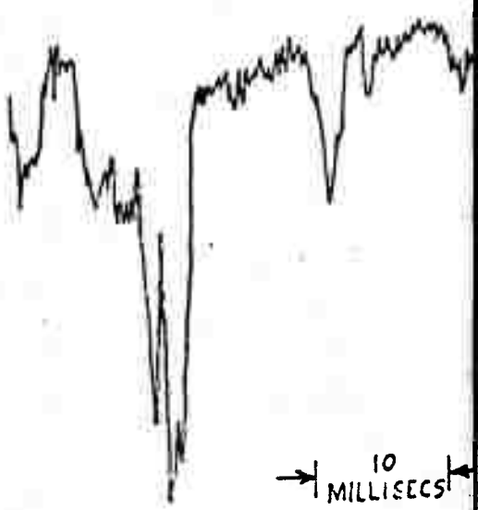


FIG. 17 C



170 DB (1000 CPS ACOUSTIC REFERENCE SIGNAL)

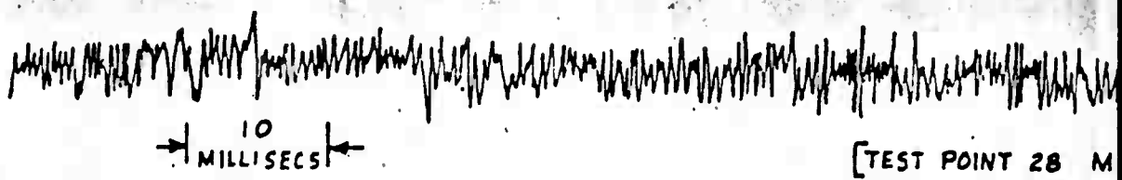


1

TRANSIENT

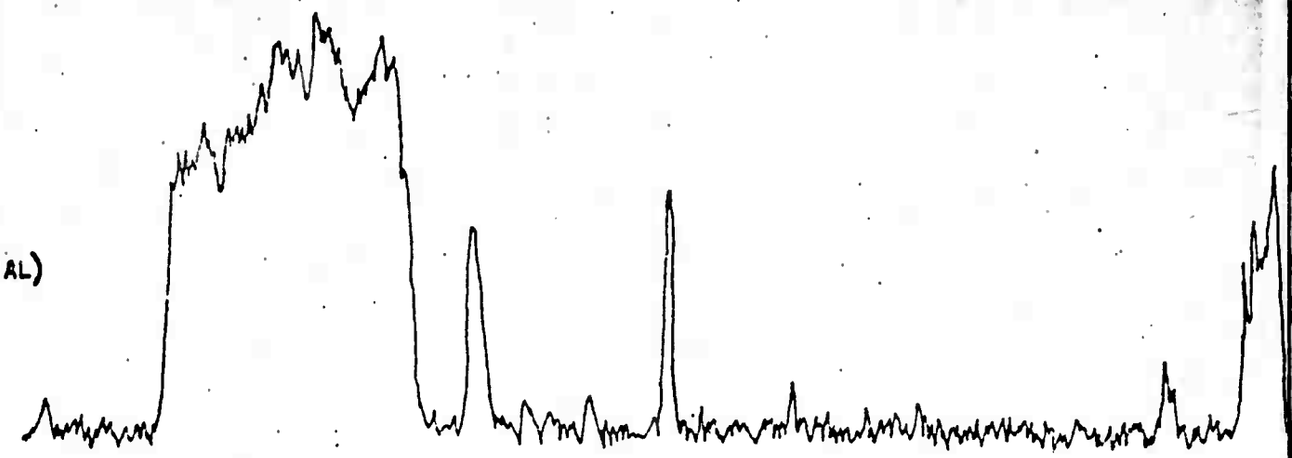
REVISED _____

150 DB (1000 CPS ACOUSTIC REFERENCE SIGNAL)



[TEST POINT 28 M

170 DB (1000 CPS ACOUSTIC REFERENCE SIGNAL)



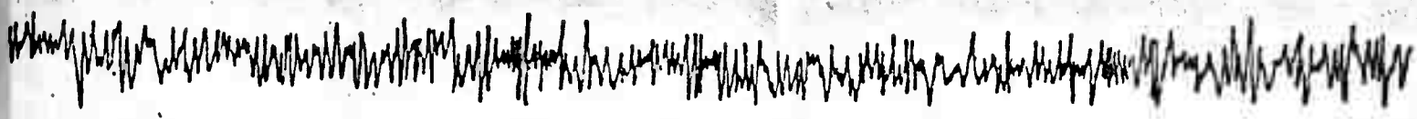
[TEST POINT 27 M

170 DB (1000 CPS ACCUSTIC REFERENCE SIGNAL)

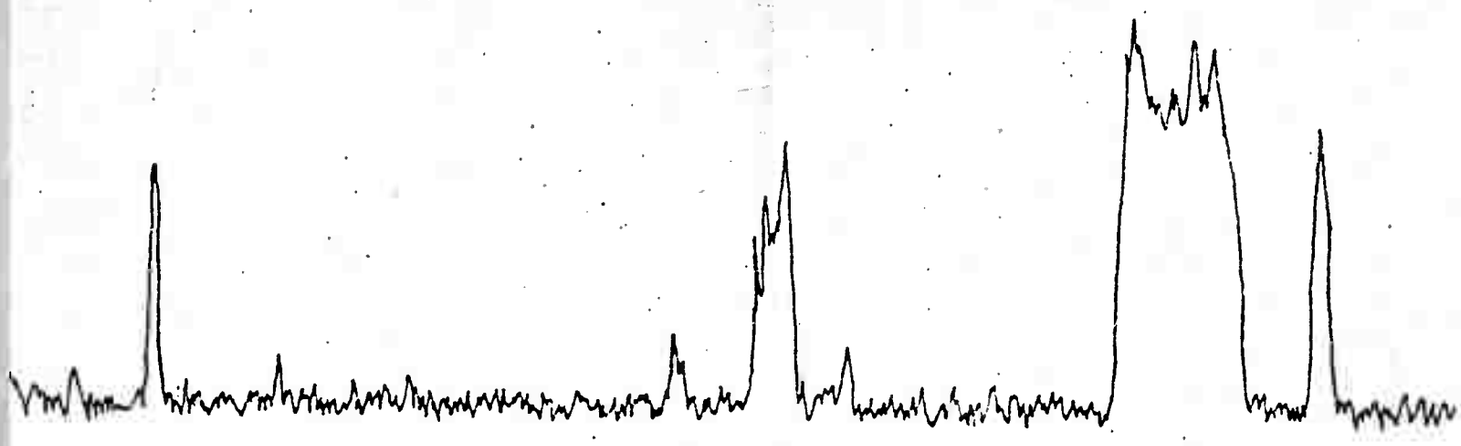
2

[TEST POINT 32

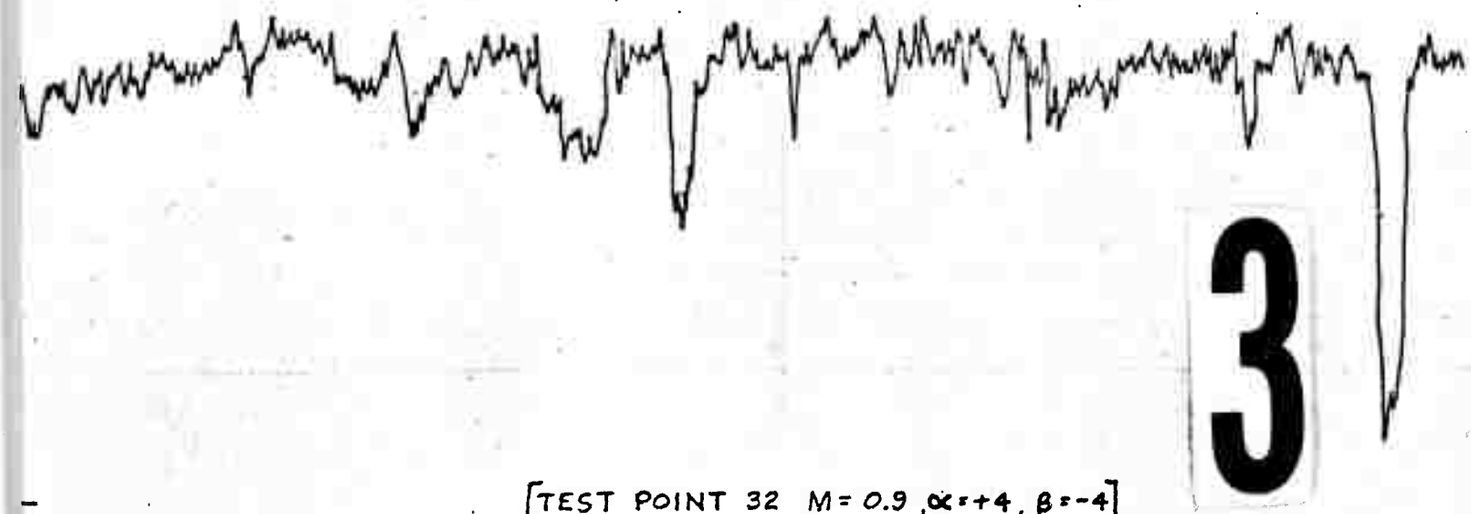
TRANSIENT PRESSURE FLUCTUATION



[TEST POINT 28 M = 0.92, α = -4, β = -4]



[TEST POINT 27 M = 0.92, α = -4, β = -4]



[TEST POINT 32 M = 0.9, α = +4, β = -4]

3

PRESSURE FLUCTUATION

FIGURE 17

UNCLASSIFIED